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No. XV OF VOL. II, 1953
No. 6789 VOL. CCLXV

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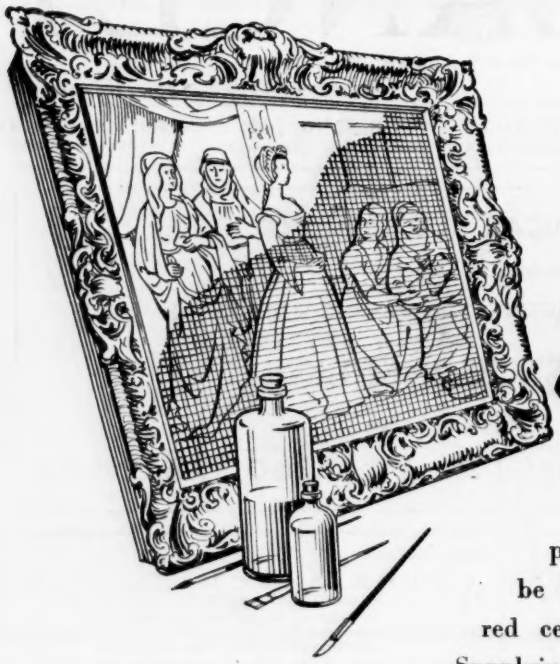

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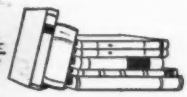

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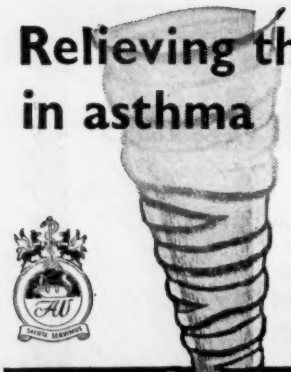

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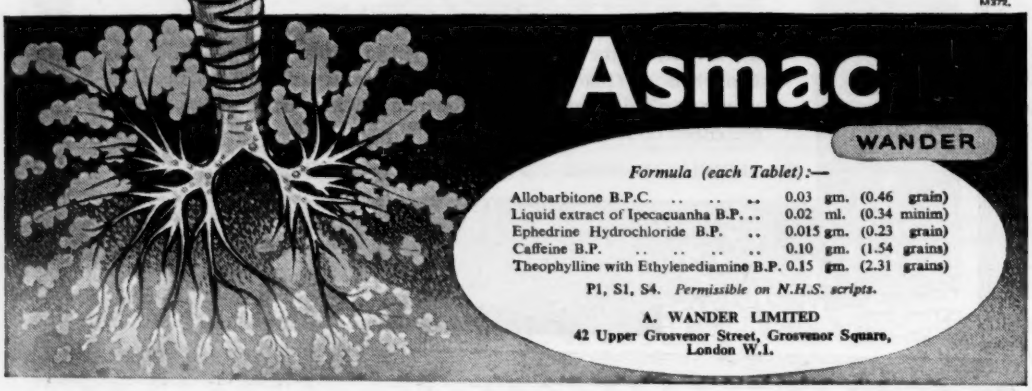
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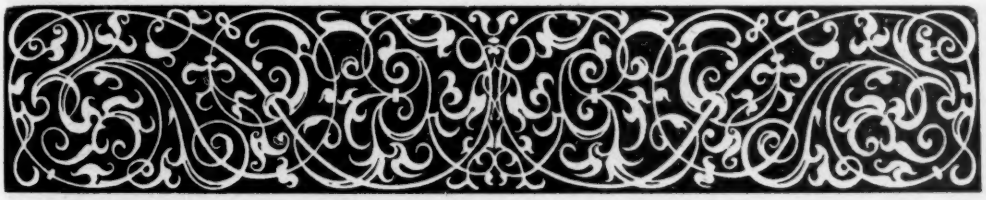

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Salicylic acid tetrahydro-furfuryl-ester	14%
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3 grammes of yeast concentrate containing the whole natural vitamin B complex and including :—

Aneurine hydrochloride (B_1) ...3 mg.
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Vitamin B deficiency, especially in its early and mild forms, is rapidly and effectively corrected by administration of VITAPLEX. The familiar symptoms — fatigue, lack of energy, anorexia, gastric and bowel disturbances, lowered resistance to common infections, etc. — are usually associated with nutritional inadequacy, adolescence, pregnancy, convalescence, stress and debility.

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- ***Easy to inject; causes the minimum of pain.***
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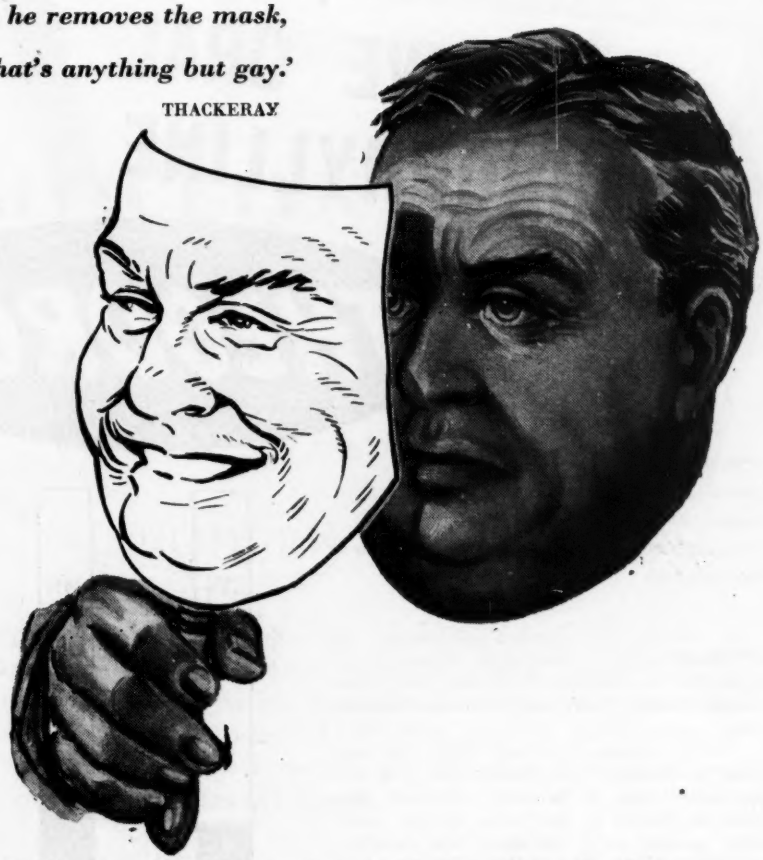
'And, when he's laughed and said his say,
He shows, as he removes the mask,
A face that's anything but gay.'

THACKERAY



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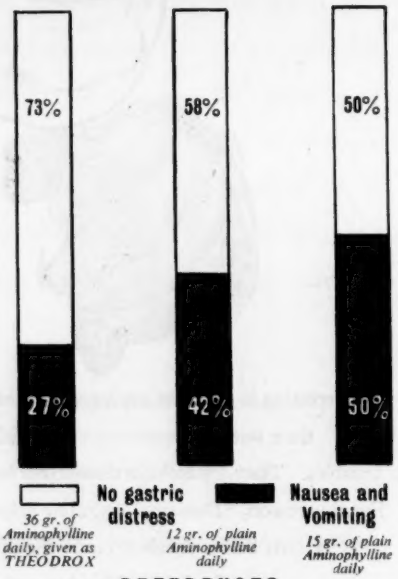
"These charts show the increase in gastric tolerance following the oral administration of Aminophylline with aluminium hydroxide (Theodrox) compared with that of plain aminophylline.



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Theodrox is also available as Theodrox with Phenobarbitone, each tablet containing in addition ½ gr. of Phenobarbitone B.P.

REFERENCES

(1) Studies with Two New Theophylline Preparations, *Amer. J.med. Sci.*, 224 : 627, 1952.

(2) A New Approach to Increasing Tolerance to Oral Aminophylline, *Postgrad. Med* 13 : 432. May, 1953. Abstracted; *Practitioner* 171: 328 (Sept. 1953)

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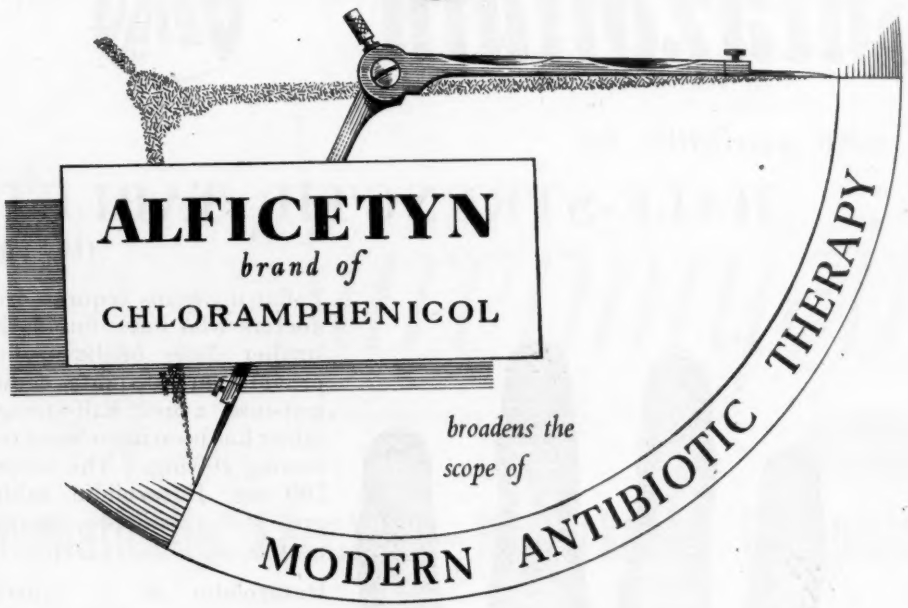

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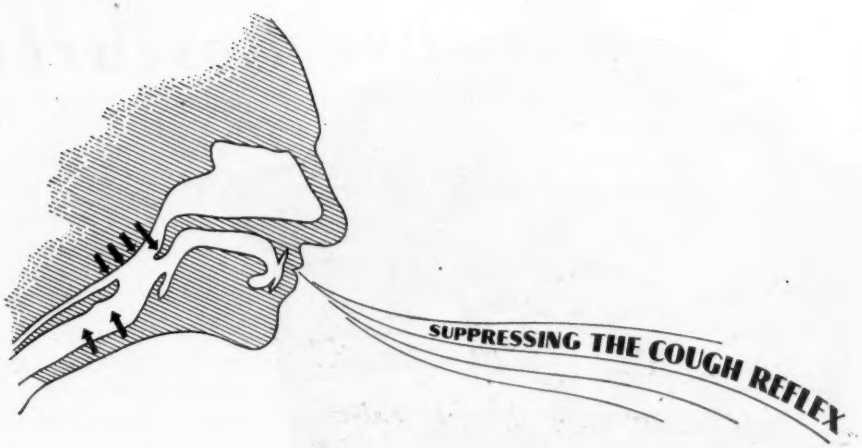

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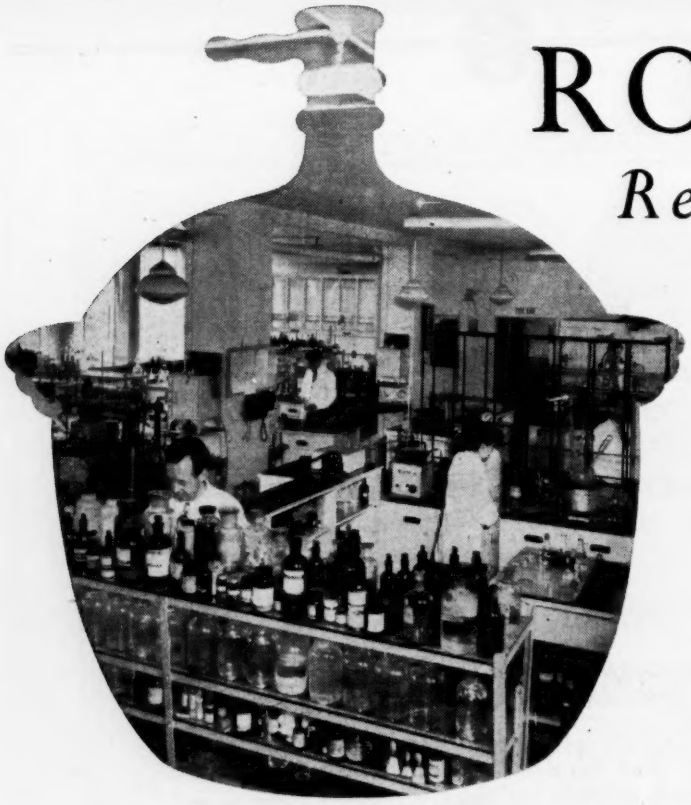

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Sleep is induced, in most cases within half an hour, and lasts five hours or more. No "hang-over" effects are experienced.

Somnesin is issued in capsules each containing 250 mg. The optimum dosage is 1 or 2 capsules.

Container of 20 capsules 3/8
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calls not for medicine, but for an opportune meeting.
It demands that the parent shall walk
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1 cc. ampoules in boxes of three: 10 cc. vials

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OVERNUTRITION AND UNDERNUTRITION

II. EFFECTS *

R. A. McCANCE
C.B.E., M.A., M.D., Ph.D. Camb., F.R.C.P., F.R.S.
PROFESSOR OF EXPERIMENTAL MEDICINE IN THE UNIVERSITY OF CAMBRIDGE

From the Medical Research Council Department of Experimental Medicine, Cambridge

Clinical and General

THE first quantitative way of studying the effects of overnutrition and undernutrition was to follow the weight of the body, and it has remained the standard one. There is a wide range of normality in the body-weight, however, and it is impossible at present to say where the ideal weight for height begins and ends. Studies of the composition of the body (see later) have shown that it will not be the same for all individuals and that it should probably vary with activity, age, and sex. In a population which is enjoying economic prosperity more people are overweight than underweight. This is due to the deposition of fat in the subcutaneous tissues, omentum, round the kidneys, and to some extent round the heart, and the distribution again varies with age and sex (Edwards 1950). In man the lean parts of the body do not account for much of the "middle-aged spread," but the heart hypertrophies if the blood-pressure rises, as it tends to do in obese people, and hypertrophy of the liver and alimentary organs has been described in rats which are eating enormous quantities of food. The ovaries of these animals decrease in weight (Brobeck et al. 1942–43a). There is an enlargement of the kidneys and suprarenals (Kennedy 1951).

The loss of weight which follows undernutrition has been investigated on man and animals. It was established by Chossat (1843a and b), and has been confirmed many times since, that the loss of weight—like the gain of weight which has just been described—is a composite process (Morgulis 1923). It may consist only in a loss of fat (see later), but in starvation and also in general undernutrition the weights of the organs fall—not all, however, to the same extent. The brain, bones, and kidneys lose very little if any weight, whereas the muscles lose a great deal, and so do the heart and the alimentary organs. Towards the close of the last century the loss of weight of the liver, pancreas, and similar organs was shown histologically to be due largely if not entirely to a decrease in the size of the cell (Loukianow 1897, 1898, 1899). Dr. M. Harrison has now made these findings more quantitative by chemical methods, and fig. 1 shows some of the results which she obtained when she was working with us (Harrison 1953a and b).

The clinical effects of prolonged overnutrition are too well known to most doctors to require any description here. Some of them, however, will be mentioned later in this lecture. They vary from flat-foot and arthritis to profuse sweating on the slightest exertion.

The results of severe and lasting undernutrition are very distressing and have probably not been seen in this country by anyone practising medicine today. Very undernourished people have a characteristic walk and posture. With knees slightly bent the trunk and arms slouch forward and the head droops towards the chest (Helweg-Larsen et al. 1952). The internal body-temperature remains very near the normal, but the distribution of blood between the skin and the internal organs changes quite early in the process of emaciation (Howarth 1951), and undernourished people always feel cold. This adds to their misery and they wrap themselves up in any clothes or blankets they can obtain. They lose the ability to hold urine in the bladder without an urgent desire to pass it, and also tend to make very large amounts of urine, particularly on lying down. The two together prevent them getting any restful sleep, and towards the end they begin to form thin watery stools and are unable to control their passage. It is probable that this diarrhœa is accentuated by atrophy of the glands lining the bowel wall, coupled with the nature of the food which these people are generally forced to eat. There is no evidence that it is due to any specific infection. The diarrhœa and polyuria are perhaps the most demoralising aspects of the terminal stages of famine. The undernutrition in Germany in 1946–47 was never bad enough to provide clinical cases of diarrhœa, but polyuria was usual. This was partly due to the large amounts of soup which were consumed morning, noon, and night, but the polyuria should be regarded as part of the redistribution and accumulation of extracellular fluid which begins quite early in the syndrome and may appear clinically as œdema (McCance 1951). Undernourished people, particularly if they are exposed to the weather, tend to get a dry scaly skin and sometimes hyperkeratosis (Keys, Brozek et al. 1950, McCance and Barrett 1951). In most people the blood-pressure falls; the level of serum-proteins tends to do the same and there is usually a mild degree of anæmia. Some of the more puzzling effects of undernutrition are the enlargements of the parotids and of the male breasts (McCance et al. 1951, Helweg-Larsen et al. 1952).

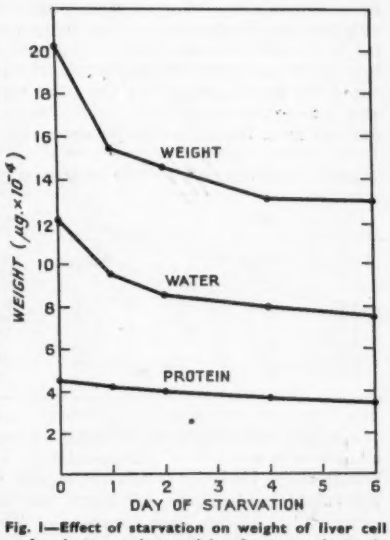
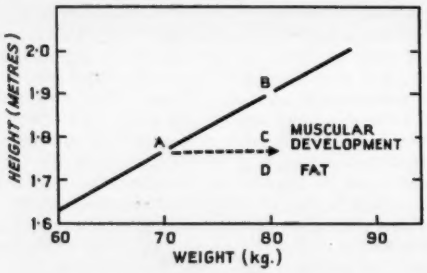


Fig. 1—Effect of starvation on weight of liver cell of male rats and on weight of water and protein in it.

The Composition of the Body

The body may be regarded as being made up of the "lean" portions and the fat. Once the latter has been deposited, it may be considered as lying to some extent outside the active metabolic framework of the body. The "lean" can be further subdivided into the cell mass and the extracellular system and is very constant in composition during health. Until comparatively recent times chemical analysis of a body after death was the only way of getting at its composition, and this method still remains the only one for certain purposes, and the most accurate one for most. In the 1930s, however, methods became available for estimating the volume of the extracellular parts of the body in living animals, and in man. Knowledge thereupon increased, and when it became possible to measure the total amount of water in the living body the physiologists were able to get some idea of the volume of the cell water by "difference." The fat in the living animal and man was next assayed successfully by two independent methods. One of these

* The second Humphry Davy Rolleston lecture for 1953, delivered before the Royal College of Physicians on May 7. Lecture I appeared in last week's issue.



Percentage composition of the body:

	A	B	C	D
Cell mass	56·0	56·0	58·2	49·0
Extracellular fluid	21·0	21·0	21·7	18·4
Fat	16·0	16·0	14·0	26·5
Minerals	7·0	7·0	6·1	6·1

Fig. 2—Effect of a gain in weight on the composition of the body.

(Behnke 1942, 1945) depended upon the principle that fat and lean have different specific gravities. By finding out the specific gravity of the body the percentage of fat in it could be calculated on the assumption that the lean part had a known and constant value. The other depended upon finding out the total water in the body and hence the weight of "lean" in it. The fat was derived from the difference between this and the weight of the body (Osserman et al. 1950). A refinement of this method was worked out independently by McCance and Widdowson (1951) by which the weight of the cell mass was calculated from the cell water, and the weight of the extracellular system from its volume. The fat was again derived from the difference between the sum of these figures together with the bony materials, and the body-weight. The advantage of this method was that it could be applied to people with abnormal "leans"—to people with œdema for instance.

TABLE I—PERCENTAGE OF FAT IN NORMAL MEN AND WOMEN

Men			Women		
Height (m.)	Weight (kg.)	% fat	Height (m.)	Weight (kg.)	% fat
1·65	62·8	18·1	1·60	63·0	16·0
1·67	56·8	17·9	1·62	63·2	19·8
1·74	81·2	22·4	1·64	74·0	28·5
1·80	62·1	10·3	1·64	75·5	21·5
1·80	72·2	15·2	1·68	55·2	12·6
1·81	56·3	7·2	1·75	79·2	21·1

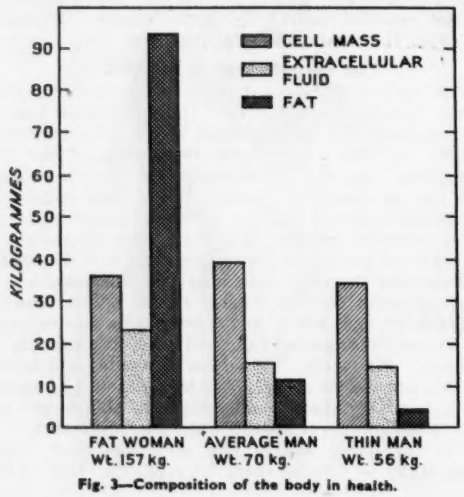


Fig. 3—Composition of the body in health.

Fig. 2 shows the line relating normal weight and height and the composition of the body of four imaginary young men, A, B, C, and D. C differed from A only in muscular development, D only in the amount of fat in his body. Notice how three people of the same weight can vary in composition, and that a light man (A) may have exactly the same composition as a heavy man (B) if he is not so tall. Table I shows the variations in the percentage of fat found by McCance and Widdowson (1951) in a group of men and women, all of whom regarded themselves as normal and were accepted as such for this investigation. The variations are large and should be studied. The lean parts of all these people were much more constant in composition and always contained 70–72% of water.

As people get older their weight tends to increase. This is due to laying down fat, but another change usually takes place at the same time which masks the large amounts actually being deposited. This is the reduction of cell mass due to reduced activity which generally accompanies advancing age (Brozek 1952). Welham and Behnke (1942) have made a series of individual analyses of the bodies of athletic young men, and compared them with those of groups of naval men who were not athletes. When the sailors and the athletes were the same weight the former were found to contain much more fat and correspondingly less muscle (see fig. 2). Brozek (1952) has made a study of active and sedentary middle-aged men and obtained a similar result.

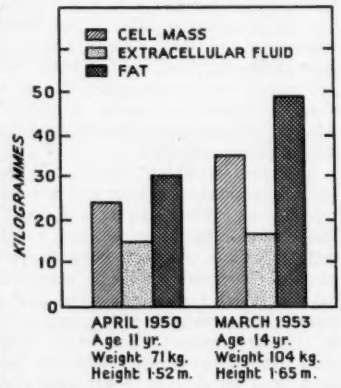


Fig. 4—Composition of the body of a fat boy.

Fig. 3 shows the composition of the body of a very fat woman and of that old friend the 70-kg. man whom we have all known from our student days. I have taken the liberty of adding myself as an example of a thin person. The enormous amounts of fat being carried about by Mrs. Gross are a terrible warning to the overindulgent. Not that they are records by any means: Daniel Lambert, whose height was 5 ft. 11 in., weighed 739 lb. when he died (aged 39) in 1809 (Gould and Pyle 1900, Encyclopædia Britannica 1910–11); I expect that about 530 lb., or 240 kg., of this was fat. Coe (1751–52) recorded a grocer of height 5 ft. 9 in. who died at the age of 30 weighing 616 lb.—probably 425 lb., or 192 kg., of it pure fat. Women have been recorded up to 850 lb. (Notes 1878, Correspondant, France 1890), which make Mrs. Gross seem light; but even her burden weighed more than the 70-kg. man did, and still more than I do. And, furthermore, Mrs. Gross had no more cell mass than I have with which to carry about all this weight. No wonder her complaint was breathlessness. There is another rather interesting thing about her. She had a little too much extracellular fluid in her "lean" (Odier and Mach 1949). This may be regarded as the additional blood, lymph, and tissue fluids necessary for the nourishment of that great mass of fat. Quantitative work lends no support to the views of those who believe that obesity is due to a retention of water (Oertel 1891, von Noorden 1910, Grafe 1920, Copeman 1950, Greene 1950, Hamburger and Mathé 1952).

Fig. 4 shows the progress of obesity in a boy aged 11 years when first seen and aged 14 when next investigated. He added 13 cm. to his height in this time and developed his muscular mass to some extent, but more than half of his increase in weight was due to fat, and the proportions of his body changed for the worse.

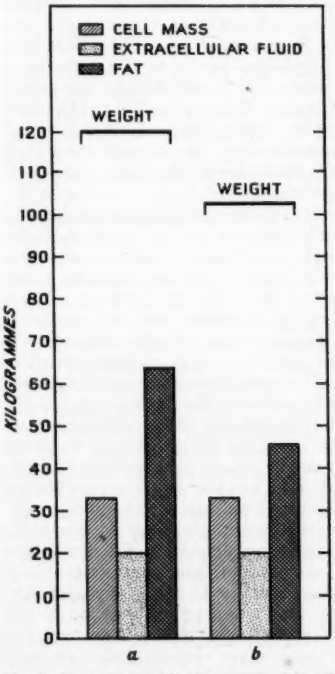


Fig. 5—Composition of a fat woman (a) and the same woman after "slimming" (b).

If an obese person's weight is reduced by a diet containing enough protein to maintain the cell mass, the evidence is that the loss of weight is entirely due to a loss of fat. The N balance is not negative (Newburgh 1944). Fig. 5 shows results which we have ourselves obtained.

Fig. 6 shows the composition of a very undernourished man. He was a German, just back from a Russian labour camp. I have again inserted myself, for comparison, and fig. 6 also shows the effect of two months' ease and plenty on the undernourished German. He had very little fat in his body when he first came back; but so have I, and it is clear that a small amount of fat in the body is no proof of undernutrition. A rapid fall in the amount is better evidence, but the most characteristic feature of real undernutrition is an increase in the amount of extracellular fluid in the "lean" and a decrease in the cell mass. This only begins to happen to any extent after considerable loss of weight, unless the protein intake is insufficient to meet the body's requirements, when it must begin to happen from the first.

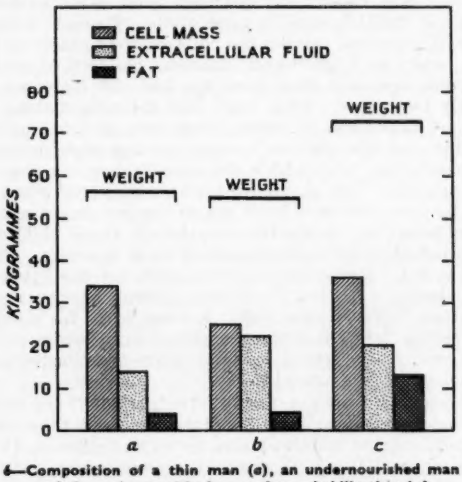


Fig. 6—Composition of a thin man (a), an undernourished man (b), and the undernourished man after rehabilitation (c.)

There is no difficulty about explaining most of these changes. The deposition of fat is due to the food entering the system providing more energy than the activities of the body demand. The loss of fat and cell mass in undernutrition are equally simply explained. They have been mobilised and metabolised to provide the energy and amino-acids for organs like the kidney, brain, and heart which have maintained the essential services of the body. The increase in extracellular fluid is probably due to a number of causes. Replacement is certainly one. As the fat in the marrow is removed its place is taken by extracellular fluid. A vacuum in the bones would be impossible, and extracellular fluid is the only material with which the spaces previously occupied by fat could be filled. As undernutrition gets worse, the large deposits of fat round the kidney and in other sites become spongy masses of connective tissue and extracellular fluid. Similar changes take place in the subcutaneous tissues. Another reason for the increase in extracellular fluid in the body is the change in the relationship of surface area to body-weight. Surface area decreases much less than the body-weight and consequently the large amounts of extracellular fluid in the skin come to contribute more and more to the body-weight. There may be changes in the level of suprarenal activity, and many other suggestions have been made, but they must all for the moment be regarded as non proven (McCance 1951).

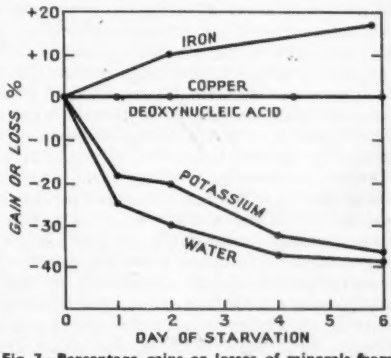


Fig. 7—Percentage gains or losses of minerals from liver cell of male rats.

With so much extracellular fluid in the body, and the loss of coherence between the cells, it is curious that all undernourished people do not get great collections of extracellular fluid in the dependent parts. Some do, and hunger œdema has become one of the proof marks of advanced undernutrition; but it is surprisingly uncommon. People can die of chronic undernutrition without ever having had œdema. Animals very rarely get it. If it does appear in man its volume is usually only a small fraction of that of the surplus extracellular fluid which the sufferer is carrying, and its appearance should be regarded as an incident rather than a milestone in the march of the disease (Widdowson and McCance 1951).

The changes which have been discussed are characteristic of the body as a whole, but not necessarily of the organs or of the cells. Starvation for six days did not increase the percentage of extracellular fluid in the liver of rats, nor reduce the percentage of protein, although the weight of the organ fell and of the cells in it (Harrison 1953b). The loss of weight was largely due to the loss of protein and water in the proportions in which they were initially present in the cells (fig. 1) but the percentage of fat actually rose in female cells. Fig. 7 shows other observations that have recently been made. The cells lost no desoxynucleic acid or copper—both constituents of the nucleus—and consequently their percentage in the liver as a whole would have gone up. The amount of iron in the liver cell may actually increase due to the deposition of iron which has become functionally redundant elsewhere in the body. Water and potassium fell in equivalent amounts so that there was no osmotic or

TABLE II—PROTEIN KATABOLISM AND OXYGEN CONSUMPTION DURING STARVATION

—	Infants	Young men	Old men
B.M.R. (cals./kg./24 hr.)	50	26	21
Nitrogen katabolised (g./kg./24 hr.)..	0·075	0·17	0·12
Percentage of calories derived from protein	4	15–20	15–20

ionic disorganisation. These findings bring to mind Gamble, Ross, and Tisdall's classical work in 1923, and help us to understand how surprisingly normal an undernourished person or animal may remain. If undernutrition produced changes in the composition or in the osmotic pressure of the body-fluids, as well as in their volume, its effects would be far more devastating than they are.

Fragmentary as these observations are at present, they demonstrate the great risk of premature generalisations about the results of overnutrition and undernutrition. Their effects must be expected to vary according to the system upon which attention is being directed. Organs may not behave like the body as a whole, and the composition at the start must make a difference to the train of events later on. Unlike the liver cells of the healthy adult female rat, for instance, which contain almost no fat, the liver of the newborn guineapig contains 12% of fat, and undernutrition may reduce this in a fortnight to 5%. Age also must be expected to alter the effects of overnutrition and undernutrition. We have recently been investigating a very striking instance of this (table II). Protein provides about 19% of the basal energy requirements of a healthy starving man, and he breaks down about 0·17% of his body nitrogen per kg. of body-weight per day. This was well known, or at any rate the information necessary to establish the point was obtained many years ago. We have recently found, however, that protein provides only about 4% of the basal energy requirements of a normal newborn baby, so that, in spite of his higher basal metabolic rate per kg. of body-weight, he breaks down in starvation only 0·075 g. of his body nitrogen per kg. of body-weight per day (McCance and Strangeways 1954). We have no knowledge at present of how the protein is held in the tissues, but we may think of it tentatively as being due to the action of a growth hormone which continues even during starvation to direct the metabolic turnover of amino-acids towards anabolism (Greenbaum 1953).

Growth and Longevity

There are often great differences between the sizes of two littermates. One piglet, for example, may be three times the size of another, probably because of differences in the nutrition of the two fœtuses *in utero*. The placing of a placenta may make all the difference between success and failure. There is probably a limit to the amount of nutrients which a mother can pass to her young *in utero*, for twins are generally smaller than single babies (Blegen 1953), and this is true of animals also (Hammond 1952).

The weights of the infants born in an undernourished community appear to be slightly smaller than those born in the same community if it is in good nutritional shape (Smith 1947a and b, Keys, Brozek et al. 1950, Dean 1951). These differences may seem small, but they may be made much larger in animals and can be magnified in man also if the tendency of overnourished and obese women to produce very large babies is taken into account (Jackson 1952). Hammond and his fellow workers (1952) have shown the importance of a high plane of nutrition during the last weeks of pregnancy in domestic animals if strong and fully developed offspring are to be expected at term. The young of a mother on a low plane of nutrition are anatomically and physiologically immature, and, although they are the correct calendar age at term, they resemble the premature offspring of a mother on a high plane of nutrition. In other words undernutrition has delayed the whole process of development without otherwise interfering with it, so that the animal's biological age is younger than its calendar age would lead one to expect. If the gestation period of the mothers on a low plane of nutrition could be artificially prolonged, by progesterone for instance, the probability is that they would ultimately deliver themselves of young which were some weeks or months older by calendar from their conception date than their developmental (i.e., their biological) age would suggest.

Undernutrition also delays the growth of animals after birth and may modify their form for any given calendar age. The farm animals have been studied more than any others (Hammond 1952); but the same fact has often been demonstrated in rats, and also that these animals have the capacity to make good this delay in their biological development if they are given the chance. It has also been shown, however, that protracted undernutrition in rats not only greatly delays the rate of growth but also very materially prolongs the calendar life of the animals (McCay et al. 1939, McCay 1952). Senility overtakes them only when they are allowed to eat their fill and so complete their development and become mature. It seems desirable that more of these experiments should be done particularly on other animals which do not continue like the rat to grow slowly throughout most of their lives. Only thus will it be possible to find out whether the epiphyses in the long bones remain ununited long enough to enable all such animals to attain a reasonably normal size. Nutrition may not be the cause of all the difference (Ministry of Health 1953), but if the heights attained by wealthy and slum populations are any indication of what might be expected to happen in man, it would look as though the epiphyses would unite before a perpetually undernourished youth could attain the full stature to which he was heir. The effect of retarding the growth of animals on their mental development offers a wonderful field of investigation to anyone who can acquire the necessary facilities.

Part of our work in Germany in 1946 was to study the effects of a change of diet on a group of orphanage children who were known to have had a low calorie intake for some years. These children were shorter and lighter than English and American children of the same calendar age. Their "bone age" was also younger. The change of diet provided the children with unlimited calories—largely in the form of bread. It also provided some calcium and vitamin D, although there is no evidence that the children were in need of the vitamin. After a year of unlimited calories the children were nearly as tall and heavy as English and American children of similar calendar ages and their bone age had also increased by nearly two years. They were, like the rats, making up for lost time; but by raising their rate of development in this way the children's biological age was increased by nearly two years within the space of only one year on the calendar. This may have been a nutritional triumph, but further reflection leads me to suggest that we may have taken six to twelve months off those children's expectation of life by feeding them up in this way. "The race is not" necessarily "to the swift nor the battle to the strong . . . but time and chance happeneth to them all" (*Ecclesiastes*, chap. 9, verse 11). We may be shortening the lives of the generation now growing up in this country by trying to make them grow faster with school meals and school milk.

Children who are generally overweight have been found to be taller and to have an older bone age than their calendar age would lead one to expect (Bruch 1939, Le Marquand 1951). There is, therefore, some evidence that the rate of growth can be forced by overfeeding.

How this comes about is at present a matter of conjecture but there are two possibilities. Firstly, if overnutrition leads initially to hypertrophy of the islets of Langerhans, much insulin may be available and liberated in the body during the earlier years of a career of overnutrition—and there is evidence that insulin can act as a growth hormone (Best 1952). Secondly, the more food eaten the more saliva is likely to be produced and swallowed, and, if Granados (1951) is correct in finding that human saliva contains a growth-promoting factor for the golden hamster, it may possibly contain one for man himself and perhaps be one of the factors which helps to keep nutrition and growth "in step."

Overnutrition and obesity certainly tend to shorten an adult's life. All are agreed about this: life-assurance statistics show it (Newburgh 1944, Evans 1952); animal experiments confirm it (McCay et al. 1941, Kennedy 1951, Hansson et al. 1953). To some extent this premature demise may be attributed to purely mechanical causes. The rats, for example, get so fat that they become almost immobile. They are no longer able to clean themselves, they drag themselves round their cages, and parts of the skin which are subjected to unusual pressure or friction lose their fur and ulcerate. The fat man is more likely to break his ankle or his femur if he slips off the kerb, and he is always a worse operation risk than the thinner man in the next bed.

Overnutrition, however, interferes with the expectation of life in much more fundamental ways than these (Hansson et al. 1953), and some instances of its effects must be considered. There has been a controversy for many years as to its influence on the composition of the serum. The level of cholesterol therein has been the focus of interest owing to its relation to arterial degeneration from which the overnourished are particularly liable to suffer (Gardner and Gainsborough 1928, Okey and Stewart 1932–33, Steiner and Domanski 1941, Gertler, Garn, and Lerman 1950, Gertler, Garn, and White 1950, Moses et al. 1952). Groen et al. (1952) found that a frugal vegetarian diet tended to give lower values in the serum, even in young adults, than a rich diet containing much meat, cheese, and eggs, but the most important contributions to this subject in recent years seem to have been those of Keys and his fellow-workers (Keys, Mickelsen et al. 1950, Keys et al. 1952). Keys (1952) pointed out that some people and some families have naturally high serum-cholesterol and that they tend to get arteriosclerosis very young. He also showed that, in man, putting up the cholesterol intake at any age did not usually raise the serum-cholesterol, although it had some effect in old people. According to him the serum-cholesterol tends to increase with age, and this is due to the consumption not so much of cholesterol as of fat. In undernourished communities the serum-cholesterol may even fall after the age of 35, and if the intake of fat is kept very low it may not continue to rise after this age even if the nutrition is adequate. We can confirm these findings about serum levels in undernutrition from a limited series of men who were investigated in Germany in 1946 (fig. 8) (Sherlock and Walshe 1951).

A high blood-pressure is one of the results of overeating, although there is always some uncertainty about the measurement in very fat people. The change seems to precede arterial degeneration, and may perhaps be a cause of it. At all events hypertension has been shown to be associated with obesity in quite young people (Odell and Mengert 1945), and the fat boy of 14 to whom reference has already been made has a blood-pressure of 160/80.

Overnutrition certainly predisposes to diabetes. This is as true of mice (Mayer et al. 1952) as of men (Evans 1952). Are we to assume that this is due to arterial degeneration of the vessels supplying the islets? Probably not, because in the mice the islets are hypertrophied when the animals get diabetes and, moreover, undernutrition in any community decreases the incidence and mortality from diabetes, so that the plane of nutrition itself seems to be the important variable. It seems more reasonable to regard the diabetes of overnutrition as a failure of the islet tissue to keep pace with the metabolic demands made upon it. A similar reason may underlie the other pathological lesions which have been described in the kidneys and other organs of obese animals (Brobeck et al. 1942–43a, Brobeck 1946, Bleisch et al. 1952). In other words, these lesions are not just the secondary effects of a rise in the serum-cholesterol and arteriosclerosis, but are really specific signs of premature old age and the converse of the prolongation of youth conferred by undernutrition. The latter is a much more stimulating thought. Underfeeding has been shown to prolong the life of a protozoon, *Tokophrya infusionum* (Rudzinska 1951). Forcing the metabolic pace may well turn out to be an ageing factor in cells in many parts of the body of higher animals, and it is certainly possible that the easiest way to add five years to man's expectation of life would be to prolong his years of growth on the calendar by controlled undernutrition and to maintain him on a low plane of nutrition for the rest of his life. The infectious diseases like tuberculosis might cause trouble, but if the brave new world of the future is ever enticing enough to make a man wish to pay this price for another five years in it, such things may have ceased to trouble us. "For the dyet of youth is not convenient for old age nor contrariwise" (Cogan 1588).

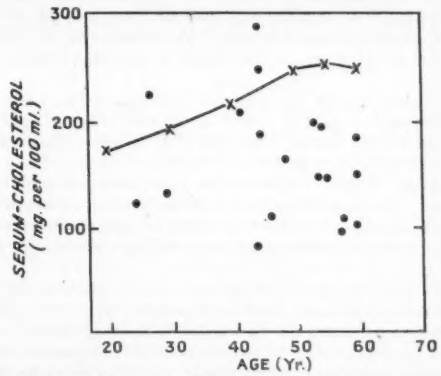


Fig. 8—Cholesterol in serum of American citizens and undernourished German men: X——X, average for 1500 men in Minnesota; ●, individual undernourished men in Germany in 1946.

Psychological Effects

Restlessness, movement, and overactivity seem to be very fundamental aspects of mild undernutrition. They are displayed by animals as low in the scale of evolution as hydra, which is only 2 cells in thickness and possesses a most primitive nervous system (Buchsbaum 1953), as well as by mammals like rats which, when they are underfed, behave in rather a characteristic way. They are always on the move; they leap up on the side of the cage whenever they are approached; and when they are given food they do not eat it quietly in the normal fashion but carry it about and try to make little piles of it in the corners. These their fellows at once steal and place elsewhere—and so the act goes on. Rats deprived of all food behave rather differently in our experience and tend to lie huddled together after a day or two, without much movement. A considerable amount of work has been done on the increased movement of hungry rats (see Keys, Brozek et al. 1950) and much more might profitably be done on the basic effects of overnutrition and undernutrition on animal behaviour. So far as man is concerned

a good state of nutrition is essential for mental contentment, and the converse would appear also to be true, for psychological trauma can impede growth (Widdowson 1951).

A disinclination for physical exertion often makes fat people appear placid; and they may be—in fact this may be one of the reasons why they are fat. But some of the men who have made their mark on history have been distinctly stout—William the Conqueror, for instance, and Sir Winston Churchill. When Julius Cæsar wished to have men about him that were fat, he really meant, I think, well-nourished men, and fatness was his proof of this.

The psychological effects of undernutrition have a literature which goes back to the dawn of history (Keys, Brozek et al. 1950, McCance 1951, Helweg-Larsen et al. 1952). No summary of it can possibly do justice to the force and pathos of the originals. Famine in some shape or form has been the lot of prisoners, castaways, explorers, the populations of cities, and even of whole countries; and, although the writers have mostly been sufferers as well, and consequently liable to subjective bias, the accounts they have given leave no doubt about the effects of famine on behaviour.

As food gets short, people begin to get very careful about wasting it. Later everything that can be eaten is diligently sought, and leaves, grass, and even earth may be taken in the hope of deriving some help from them (McCance 1951). Where hunger and satiety are fellow citizens, the rubbish-bins of the rich are scavenged for everything edible in them by the starving poor. As the famine gets worse, food begins to occupy more and more of people's thoughts; other interests lapse and after a time it becomes the only topic of conversation and the cause of ceaseless activity. Loyalties change as the organisation of society breaks down. At first any food obtained will be shared with the family or group which has a common table. This was the position in Wuppertal when we were there in 1946–47. When a small present of food was taken to someone in a German family it was obvious that everyone in the household would have the chance of sharing it; but the parcel was at once concealed if the doorbell rang for another visitor—all very reminiscent of the undernourished rats. When famine gets very bad it tends to become a matter of every man for himself. The behaviour of the "population" as a whole depends upon its morale. If this is good—and it has been very good in many of the picked parties of explorers who have run short of food (Shackleton 1909, and see Keys, Brozek et al. 1950)—this last stage may be postponed almost indefinitely. It probably developed most rapidly and was to be seen at its worst in the concentration camps, where group loyalties were almost non-existent. "Fights and flogging practically always attended the distribution of food, calling to mind the feeding of animals at the zoo" (Helweg-Larsen et al. 1952). Whatever the morale, standards of behaviour always tend to fall with the supplies of food. Black-marketeering, thieving, plunder, and even murder become commonplace events and no power on earth can prevent them.

In the last stages people may become completely apathetic to all that goes on around them. They lose all their self-esteem, their interest in their neighbours, male or female, and even in the struggle for food. When this happens the end is not very far away.

Closing Reflections

Hitherto research on nutrition has been directed largely by circumstances or economic reasons. Wars have led to widespread undernutrition, prosperity has filled the clinics with preventable obesity—and consequently both have been studied. Animal husbandmen have bred and fed their animals for rapid maturity and marketable qualities and political husbandmen have come near to doing the same for children. Curiously little work or thought has been devoted to a study of the desirable plane of nutrition for the different years of human endeavour.

Why such a plane should be desirable and how to achieve it have been still less considered. Yet, judging by the figures for infantile mortality, the child of mean size at the time of delivery stands a better chance of survival than an underdeveloped one or one which has grown too great in utero. The reasons are often clear enough; but how to produce the happy mean is another matter. It would, however, be a minor triumph of preventive medicine if all babies could be brought to delivery weighing between $6^1/_2$ and $7^1/_2$ lb. We cannot define the desirable levels of nutrition later in life, nor yet how they can be achieved. They have not yet been studied realistically. Haldane (1940) once wrote a little essay "on being the right size." One day someone may write a book "on being in the right plane of nutrition." There is one, that is certain, for every age; but is it necessary to drink 500 ml. of milk a day throughout life, or to eat 50 g. of animal protein in order to attain it? Some politicians are sure it is, but I am not. I certainly hope not, for I see no hope of providing the hungry millions of this world with either of these good things.

I have a feeling that we should think of how to achieve that happy mean in matters of nutrition which may well enable us to reduce infantile mortality and to prevent the vigour of life from being weakened by the insidious onset of old age. μηδὲν ἄγαν may well turn out to be the legend for one of the signposts on the nutritional road to health.

These lectures have been prepared jointly with Dr. E. M. Widdowson. I have had the privilege of delivering them, but if they have any merit, half of it is due to her.

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TRANSFUSION BY THE INTRA-ARTERIAL ROUTE

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THIS paper is based on one read in 1951 before the Association of Surgeons of Great Britain and Ireland; its purpose is to indicate the benefits, in certain circumstances, of retrograde intra-arterial transfusion and to discuss the possible dangers if solutions other than blood are used.

The history of intra-arterial transfusion dates back to the beginning of this century. Nearly fifty years ago Crile and Dolley (1906) showed that retrograde arterial perfusion with Ringer's solution to which adrenaline and hirudin had been added would consistently restart a heart stopped by an overdose of chloroform or ether. This response was elicited up to 5 minutes after cardiac arrest and despite the failure of cardiac massage.

This fact supported the findings of Sollman (cited by Crile and Dolley 1906), who postulated that the initiation of cardiac action depended on raising the coronary perfusion pressure to 30 or 40 mm. Hg and was not influenced by the qualify of the perfusing fluid; indeed Sollman restarted the heart in physiological preparations by perfusing the coronary arteries with mercury. Once cardiac action had been initiated, however, the quality of the perfusant was important if the heart beat was to continue.

Little attention seems to have been paid to these findings, for few references to arterial perfusion were published before Kemp (1933) suggested that retrograde arterial perfusion with physiological saline solution should be tried in man as a heroic measure to restart the heart after cardiac arrest during an operation.

This method of treatment again lapsed into obscurity until Birillo (1939) and Negovsky (1945) claimed considerable success with it. Since then several short papers have appeared, mainly in America, each claiming that retrograde arterial perfusion has advantages over the normal intravenous route, but almost all emphasising the danger that local gangrene might follow its use (Kohlstaedt and Page 1943, Porter et al. 1948, Page 1947, Haxton 1952, Devitt and Widgerow 1951, Bayles 1951, Bingham 1952).

While trying to produce by bleeding a controllable level of circulatory depression in dogs, Kohlstaedt and Page (1943) found that the resulting hypotension could be more satisfactorily treated by intra-arterial than by intravenous replacement of blood.

Clinical Evidence

Experience in the departments of anæsthetics and surgical neurology of Edinburgh University concerns cases in which retrograde intra-arterial injection is used to replace blood purposely withdrawn in the technique of preoperative exsanguination, or lost accidentally when large vessels are torn during the removal of a vascular tumour.

For the past four years preoperative bleeding of the patient has been used as an aid in certain intracranial operations. Following premedication with 'Nembutal' gr. 3 and atropine gr. $^1/_{100}$ an hour before the operation, anæsthesia was induced with thiopentone 0·5 g., and the larynx was intubated under direct vision, anæsthesia being maintained with nitrous oxide and oxygen.

After infiltration of the surrounding tissues with 2% procaine solution the radial artery was exposed through a small transverse incision over the artery about 2 in. proximal to the radial-styloid process. The artery was tied, a small incision made in the vessel proximal to this ligature, and a cannula inserted which was connected

to a damped aneroid manometer and the blood-taking and transfusion set and was kept free from clots with intermittent injections of 1% sodium-citrate solution in saline solution.

When the operation was about to start, blood was rapidly withdrawn into a bottle containing the appropriate amount of sodium citrate until the desired degree of reactionary vasoconstriction was produced. This was usually achieved by the withdrawal of 500–1000 ml., the systolic blood-pressure falling to about 80–90 mm. Hg and the pulse-rate rising to not more than 120. The blood-pressure was maintained at the desired level by the addition or subtraction of such volumes of blood as were necessary. The blood-pressure was recorded directly from the manometer connected to the radial artery as well as by auscultation over the brachial artery of the other arm.

During the infusion of blood there was no recordable change in blood-pressure except for a very transient rise of about 5 mm. Hg at the start and a momentary comparable fall on its completion. Thereafter the blood-pressure remained constant for 2–5 minutes and then rose to a new level over the next 10 minutes.

Even after prolonged hypotension, lasting up to 6 hours or more, the addition of a relatively small volume of blood intra-arterially was often sufficient to raise the systolic pressure from 70 to 80 mm. Hg.

In an attempt to compare the responses to intravenous and intra-arterial injection, transfusions of 100 ml. of blood were given at the rate of 8 ml. a second. In each case the intravenous injection preceded the arterial one by half an hour, during which the patients' circulatory responses were recorded. A similar observation period followed arterial transfusion.

RESPONSES TO INTRA-ARTERIAL BLOOD-TRANSFUSION

Case no.	Time	Blood-pressure (mm. Hg)	Blood-flow below knee (%)	Blood-flow with foot occluded (%)	Pulse-rate	Change in blood volume (ml.)
1	10.00 A.M.	120/80	100	100		
						−500
	10.10 ,,	110/80	80	68		
	10.40 ,,	90/80	80	50		
	11.00 ,,	90/70	100	85		Artefact
	11.50 ,,	86/70	70	50		
	12.09 P.M.	90/70	60	50		
						+100 ml. I.V. (8 ml. per sec.)
	12.10 ,,	90/70	60	50		
	12.15 ,,	90/70	60	50		
	12.30 ,,	85/60	60	..		
	12.49 ,,	75/60	40	33		
						+100 ml. I.A. (8 ml. per sec.)
	12.50 ,,	75/60	50	40		
	12.52 ,,	80/60	50	45		
	12.55 ,,	90/60	60	50		
						+400 ml. I.A.
	2.00 ,,	100/60	110	100		
2	10.30 A.M.	110/80	100	100		
						−500 ml.
	10.40 ,,	110/85	120	110		
						−250 ml.
	10.50 ,,	90/80	66	50		
	11.00 ,,	90/80	58	45		
	11.30 ,,	90/75	58	45		
						+100 ml. I.V. (8 ml. per sec.)
	12.00 noon	90/75	66	50		
	12.30 P.M.	90/75	66	50		
						+100 ml. I.A. (8 ml. per sec.)
	12.32 ,,	95/80	75	70		
	12.33 ,,	100/80	90	90		
	1.00 ,,	100/80	80	75		
						+650 ml. I.A.
	1.30 ,,	110/70	110	120		
3	10.15 A.M.	100/80	100			
						−750 ml.
	10.20 ,,	75/70	..			
	10.30 ,,	80/70	54			
	Intermediate results altered by hypothalamic stimulation					
	12.30 P.M.	90/60	40			
	1.00 ,,	90/60	54			
	1.08 ,,	100/60	20			Hypothalamic stimulation +50 ml. I.A.
	1.09 ,,	..	..			
	1.10 ,,	100/60	46			
	1.20 ,,	90/60	33			
						+700 ml. I.A.
	1.40 ,,	110/60	73			
4	11.30 A.M.	110/70	100			
						−500 ml.
	11.35 ,,	95/80	90			
	11.45 ,,	110/90	70			
						−250 ml.
	12.00 noon	110/95	50			
	12.30 P.M.	105/90	30			
	12.45 ,,	90/80	20			
	12.50 ,,	90/80	110			Measured during transfusion of +200 ml. I.A. (8 ml. per sec.)
	12.51 ,,	90/80	20			
	12.53 P.M.	90/80	35			
	Cuff of recording chamber punctured					
5	1.00 ,,	110/70	100			
						−750 ml.
	1.30 ,,	100/70	113			
	1.50 ,,	100/50	73			
	2.05 ,,	100/60	65			
						−750 ml.
	2.10 ,,	100/60	40			
	2.20 ,,	100/55	26			
						+60 ml. I.A. (8 ml. per sec.)
	2.25 ,,	100/50	40			
	2.27 ,,	100/50	46			
	2.30 ,,	125/60	54			
	2.35 ,,	130/70	54			
	2.45 ,,	130/60	66			
	3.00 ,,	130/60	66			
6	12.00 noon	100/70	100			
						−500 ml.
	12.10 P.M.	100/70	80			
						−250 ml.
	12.15 ,,	90/70	40			
						−250 ml.
	12.20 ,,	80/65	20			
	2.00 ,,	75/60	20			
	2.02 ,,	75/60	60			
						Measured during transfusion of +100 ml. I.A. (8 ml. per sec.)
	2.04 ,,	75/60	70			
	2.05 ,,	90/60	100			
	2.10 ,,	80/60	180			
	2.30 ,,	85/60	120			
	3.00 ,,	80/60	50			
	4.00 ,,	80/60	40			
	5.00 ,,	90/60	20			
						+150 ml. I.V. (8 ml. per sec.)
	5.30 ,,	90/65	20			
						+150 ml. I.A. (8 ml. per sec.)
	5.31 ,,	90/65	20			
	5.32 ,,	90/65	20			
	5.34 ,,	90/65	30			
	5.40 ,,	100/70	40			
	6.20 ,,	100/60	110			+700 ml.
7	10.00 A.M.	120/80	100			
						−200 ml.
	10.20 ,,	110/80	80			
	10.40 ,,	100/80	75			
	11.00 ,,	100/80	75			
	11.30 ,,	100/70	75			
						+200 ml. I.A. (8 ml. per sec.)
	12.00 noon	110/60	110		84	
	12.10 P.M.	120/50	100		88	
						+200 ml. I.A. (8 ml. per sec.)
	12.30 ,,	70/40	..		52	
	12.40 ,,	120/60	..		80	
	1.00 ,,	80/40	..		40	
						+200 ml. I.A. (8 ml. per sec.)
	1.10 ,,	120/50	..		84	

On a few occasions when blood was not available a rapid intravenous infusion of plasma was used in an attempt to combat the effects of a sudden massive hæmorrhage. In those cases in which hypotension had been severe and lasted for 5–6 hours the patients' responses to intravenous therapy were unsatisfactory. In one particular instance the patient's condition was unaffected by the rapid intravenous administration of 1500 ml. of plasma. An hour later 150 ml. of blood was given by the retrograde arterial route, whereupon there was an immediate and sustained rise in blood-pressure, with a fall in pulse-rate. Plasma was not given intra-arterially, for reasons given below.

Even with rapid rates of injection—e.g., 8 ml. a second—no sign of cardiac embarrassment was noted until the estimated restoration of blood volume was complete. Then the pulse suddenly slowed, the blood-pressure fell considerably, and there was pronounced peripheral vaso-dilatation. These circulatory changes were reversed spontaneously and completely within 2–3 minutes after the transfusion had been stopped.

Plethysmographic Studies

As already stated, the response to intra-arterial transfusion usually appeared after a delay of 2–5 minutes. In an attempt to discover what was happening during this latent period, plethysmographic records were made from ten consecutive cases, and seven satisfactory plethysmograms were obtained. The three other tracings were discarded either because they were marred by technical faults in the equipment or because severe circulatory disturbances had appeared as a result of interference with the basal structures of the brain.

It was decided to estimate the blood-flow through the leg and foot, although it was known that this method of measurement had been abandoned several years ago. Under conditions of altered blood volume the vessels of the skin, which is a large and not unimportant organ, must exert a considerable influence. For the purpose of comparison the first two cases had simultaneous recordings made with the foot occluded and with the foot circulation intact. The difference noted appeared to be one of degree rather than response.

Plethysmograms were recorded by the method described by Barcroft and Swan (1953).

Results

The results obtained in seven of the cases are set out in the accompanying table. Blood-flows were estimated as percentages of the initial blood-flow.

In one case, after a prolonged period of reactionary vasoconstriction, the plethysmogram altered from the usual triangular shape, becoming trapezoidal in outline. This appearance coincided with the disappearance of the superficial veins; the normal triangular tracing reappeared when the superficial veins began to be visible once more. This alteration was not due to faulty recording but was probably due to a severe reduction of the peripheral vascular capacity brought about by intense vasoconstriction.

Discussion

Retrograde arterial transfusion has been used successfully in 165 cases. Whereas intravenous and intra-arterial transfusions are equally effective in patients who have suffered blood-loss and hypotension for brief periods, they differ when the latter conditions are more prolonged, the patient failing to respond adequately to intravenous therapy. A refractory state develops in which there is a less satisfactory response to intravenous than to intra-arterial infusions.

It may be asked why arterial transfusion should be successful when intravenous therapy is not, and why the reaction to equal amounts of blood given by the two routes should differ both immediately and later.

When oligæmic shock has developed after severe hæmorrhage, some patients show a satisfactory initial response to intravenous infusions, which, however, is maintained for only a few hours. This happens even if the circulating blood volume has been restored to normal.

It appears that circulatory failure following severe hæmorrhage or injury has two components: a failure of vasoconstriction to compensate adequately for the reduced circulating blood volume, and a "central factor" probably due to a failure of the heart to act as an efficient pump under normal conditions of venous return and filling pressure.

In patients who have been temporarily resuscitated by adequate intravenous therapy the peripheral mechanism can still work, for a reasonable circulation is maintained for several hours before the patient again passes into the state of circulatory failure.

Wiggers (1947) has shown that rapid intravenous transfusion is followed by an increase in venous return and cardiac output, but that the auricles and ventricles are considerably distended, working under abnormal conditions of filling. As the venous pressure falls after the transfusion is stopped, cardiac output declines, and so the patient again develops circulatory failure. This is the state of so-called irreversible shock, and Wiggers showed that the myocardium was significantly depressed. The cardiac output was therefore reduced for a normal degree of filling and hence stimulation.

In the less ill patient in whom circulatory failure is present, but where successful resuscitation follows adequate intravenous transfusion, probably the "central" insufficiency has not yet developed to a serious degree. In this case the most important factor has been the inability of reactionary vasoconstriction to maintain an adequate circulation, because of an excessively reduced circulating blood volume, correction of which alone is sufficient to allow restoration of a normal circulation.

In several published reports it has been postulated that retrograde arterial perfusion will raise the pressure in the arterial tree, including the aorta, according to physical laws without having to presuppose any other less tangible theory. This rise would lead to an increased coronary perfusion pressure, and accordingly improved nutrition of the myocardium, restoration of the efficiency of the heart, and so correction of "central" failure.

This suggestion, by ignoring the vasodepressor responses from the aortic arch and the carotid arteries, assumes that there is no alteration in peripheral resistance during transfusion; for, if there is any change, there may be no significant alteration in blood-pressure.

No alteration in blood-pressure during intra-arterial transfusion could be demonstrated in any of the cases under review, apart from the very transient rise and fall of some 5 mm. Hg at the start and end of the transfusion. This minimal and extremely brief fluctuation hints at a readjustment in the operation of the vasomotor compensating mechanisms.

Plethysmograms showed that the blood-flow measured below the knee during the transfusion was increased 2–5 times, and that the flow returned to the pre-transfusion level immediately the administration was stopped; 2–3 minutes later the recordings indicated a progressively increasing blood-flow before there was any change in blood-pressure.

The plethysmograms showed that there was a difference in the response to the administration of small quantities of blood between the intravenous and retrograde arterial routes, the response being greater and more prolonged after arterial transfusion. Indeed, after all but the shortest periods of reactionary vasoconstriction no response could be demonstrated after the intravenous administration of small quantities, such as 100 ml., of fluid, whether blood, plasma, or other substitute.

It will be appreciated that it is difficult to draw absolute conclusions from plethysmograms, but the interpretation of the tracings obtained, along with simultaneous blood-pressure recordings, suggest that almost immediately after the initiation of arterial transfusion there is a decrease in the degree of peripheral vasoconstriction. Vascular tone returns to the pre-transfusion level immediately the injection of blood is terminated, to be followed within 2–3 minutes by a further decrease of vasoconstriction and, in the presence of an unaltered blood-pressure, an increase in cardiac output. A rise of blood-pressure only occurred several minutes after the first change in peripheral blood-flow had become apparent.

This response has usually been seen within 5 minutes of the end of the arterial transfusion, although in ten cases the response was less than anticipated. These latter were all cases in which a protracted period of severe hypotension had been maintained. With the giving of further quantities of blood over the next 10 minutes the circulation was permanently restored and maintained at an adequate level.

It has not been possible to demonstrate the mechanism whereby permanent resuscitation follows intra-arterial transfusion whereas under equally critical conditions intravenous therapy produces only temporary improvement. It seems reasonably certain that the difference in results depends on restoration of the efficiency of the heart, and it is surprising that an intra-arterial transfusion of 100–200 ml. of blood, lasting only about 30 seconds, can initiate such a dramatic change. That a permanent change is brought about, however, is beyond dispute.

Dangers

Either arterial or venous " bank " blood may be used as the perfusing fluid. On one occasion 100 ml. of physiological saline solution was injected, and the whole arm assumed a waxy hue from the finger-tips to the axilla; nearly 5 minutes elapsed before a normal appearance returned to the limb.

To perfuse a limb with a non-oxygen-carrying fluid is to court disaster. Even in severe circulatory failure the patient's blood contains oxygen which is utilised by his tissues; but if plasma, saline, or other blood substitute is used, this solution will produce a rapid anoxia of the perfused tissues, which may be sufficient to cause local necrosis. This is probably of significance because all but two of the cases of gangrene published occurred after the use of plasma or of saline solution. Of the two exceptions, one case of gangrene was due to an anatomical abnormality in the arterial supply of the hand, there being no radial-ulnar anastomosis; and the other was attributed to reflex spasm of the radial artery induced by the escape of blood into the tissues.

In the present cases the radial artery was routinely tied in continuity; the only complication met so far has been a mild blotching of the skin for a few hours over the area of distribution of the radial artery.

Conclusions

In civilian practice intra-arterial transfusion should probably be restricted to the preoperative treatment of patients in whom there has been a considerable reduction of circulating blood volume and when there is no satisfactory response to intravenous therapy after a brief period of adequate trial.

Intra-arterial transfusion is of value during those operations in which uncontrollable and massive hæmorrhage is likely—e.g., in certain operations on the brain and the heart.

In military practice, when supplies of blood may be limited and time short, this method may be preferred to intravenous therapy, for it has been shown experimentally, as well as clinically, that a small quantity of blood given by the retrograde arterial route has a vastly greater effect than an equal amount of blood given intravenously. Once the desired effect has been achieved, the arterial transfusion can be discontinued, and plasma or other substitute administered intravenously to restore the patient's blood volume.

When the advantages of this method of treatment in suitably selected cases are compared with the disadvantages, the latter appear to be small. The risk of gangrene following ligation of the radial artery at the wrist is very slight, and to take such risk is justifiable in dealing with cases in which life may depend upon the ability to resuscitate the patient.

In severe circulatory failure it is doubtful whether it will take longer to expose and cannulate an artery than a vein shrunken and emptied by reactionary spasm. Nevertheless it may be difficult to cannulate the radial artery under conditions of extreme vasoconstriction, and occasionally it may be necessary to insert a needle into the femoral artery or even into the aorta.

We have never yet met conditions in which reactionary arterial spasm involving the limb prevented the injection. In those few cases in which there was difficulty spasm was restricted to a segment of the vessel about 2 cm. long at the site of insertion of the cannula. It was readily overcome by applying 2% procaine solution to the affected segment. Spasm is readily caused by rough handling of the artery or as the result of using too great a transfusion pressure.

Summary

In the data collected from 165 cases there is evidence that intra-arterial transfusion is of advantage in the treatment of patients who have become exsanguinated to critical levels, or are in severe circulatory failure for other reasons; it is unnecessary and unjustifiable where the blood-loss is small.

I am grateful to Prof. Norman Dott for his encouragement and assistance during this investigation, and to Dr. John Gillies and Prof. David Whitteridge for their help in planning this study and for their valuable criticism in assessing the results.

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" . . . We look back with horror on the sufferings of people even two or three generations ago, when we consider how much could have been relieved by modern anæsthesia and sedation, let alone the advances in surgery and therapeutics. Yet we still tend to accept a host of minor disabilities as visitations of God—painful, embarrassing, irritating, or mentally depressing as the case may be—even when remedies are within reach. This applies especially to disabilities of the feet, minor but intensely troublesome rheumatic conditions, allergic manifestations of one kind and another, and the lesser psychoneurotic infirmities that respond so well to skilled guidance and human understanding. We are in danger of repeating in our age of science the magnificent bathos of Asa, as reported in the Book of Kings:

' The rest of all the acts of Asa, and all his might, and all that he did, and the cities which he built, are they not written in the book of the chronicles of the kings of Judah? Nevertheless in the time of his old age he was diseased in his feet.'

This is still the outstanding fact of 1953: that the prevention of painful and crippling conditions of the feet is a subject deserving studies of epidemiological dimensions." —Prof. J. M. MACKINTOSH, *The Practitioner*, October, 1953; p. 440.

HYALINE MEMBRANE IN THE NEONATAL LUNG

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ONE of the great dangers of early neonatal life is the failure of the lungs to expand fully. This failure may exist from the time of birth (primary atelectasis), or a varying degree of expansion of the lungs may be followed by collapse (secondary atelectasis).

Atelectasis, whether primary or secondary, is very frequently encountered in premature infants and is indeed the most important single cause of death among them. Though the use of antibiotics has greatly reduced the prevalence and severity of respiratory infections in the neonate, death from respiratory failure is still common in the premature infant. The clinical features of atelectasis neonatorum, and some methods now being utilised to combat it have lately been described by Donald and Lord (1953).

Of the pulmonary abnormalities found in association with atelectasis in the newborn, the most striking is the presence of a hyaline membrane. This peculiar membrane was first noted by Hoccheim (1903) and was described more fully by Johnson and Meyer (1925). The latter were chiefly interested in pneumonia in the newborn and in the relation of this membrane to pulmonary infection. There has been considerable confusion over its ætiology and significance, and the subject is reviewed in detail by Tran-Dinh-De and Anderson (1953).

In view of the importance of atelectasis as a cause of death in the newborn, the development of a hyaline membrane seemed to merit further investigation. Accordingly I have reviewed the histological preparations from the lungs of all infants examined post mortem at the Queen Charlotte's Maternity Hospital and Hammersmith Hospital in the five years 1948–52 inclusive. In all, some 2500 blocks of lung tissue have been studied.

Findings

INCIDENCE OF HYALINE MEMBRANE

Out of 810 necropsies on stillbirths and neonatal deaths, 108 cases were found to show hyaline membrane. It was then noted that none of the infants in which it occurred had been stillborn. The membrane had therefore developed in 108 (29%) of 376 liveborn infants —an incidence similar to that reported by Bruns and Shields (1951), Tregillus (1951), and Blystad et al. (1951). Only Miller and his associates (1949, 1950) have reported hyaline membrane in stillbirths.

Of the 108 infants with hyaline membrane 76 were males and 32 females (male preponderance 2·4 : 1).

RELATION OF MEMBRANE TO MATURITY OF INFANT

The cases may be grouped according to their birth weights as follows :

500–1000 g.	12	2001–2500 g.	15
1001–1500 g.	36	Over 2500 g.	22
1501–2000 g.	23		
		Total	108

It will be seen that only 22 (20%) weighed 2500 g. or over. Thus hyaline membrane occurs chiefly in premature infants.

TIME AND CAUSE OF DEATH

The ages of the infants dying with membrane in the lung were :

0–12 hours	44	37–48 hours	13
13–24 ,,	27	Over 48 ,,	12
25–36 ,,	12		
		Total	108

It will be seen that 71 (66%) died in the first 24 hours. The earliest death was at $1^1/_2$ hours, and the latest at $6^1/_2$ days. 4 other infants lived for 6 days.

The main causes of death were :

Hyaline membrane only	81
Subdural hæmorrhage	9
Intraventricular hæmorrhage	7
Hæmolytic disease	5
Pneumonia	4
Intrapulmonary hæmorrhage	1
Hydrocephalus	1
Total	108

Hyaline membrane was the sole pathological lesion in 81 cases (75%). Intracranial (subdural) and intraventricular hæmorrhage were the next commonest causes. Intraventricular hæmorrhage is not infrequently associated with atelectasis and the formation of hyaline membrane. It is to be regarded as the result of anoxia rather than of birth trauma. There were only 4 cases of pneumonia. Of the 22 infants weighing 2500 g. or more, 7 were postmature, 4 were delivered by cæsarean section, 3 suffered from hæmolytic disease, 1 had hydrocephalus, and 6 had severe subdural hæmorrhage following difficult forceps deliveries. Thus 10 (45%) had some pathological disorder, 4 (18%) were delivered by section, and only 1 had a normal gestation and delivery. Although this group of 22 infants were not subject to the hazards of prematurity they could not be regarded as normal healthy infants at the time when hyaline membrane was formed.

INCIDENCE OF CÆSAREAN SECTION

As Potter (1952) has remarked, hyaline membrane often occurs in infants delivered by cæsarean section. In the present series of 108 cases 22 infants (20%) were delivered by section. The period of gestation at which section was carried out, and the reason for the section, are shown in the accompanying table. The 4 infants

CÆSAREAN SECTION

Reason for section	No.	Period of gestation	No.
Pre-eclamptic toxæmia	13	26–30 weeks	5
Antepartum hæmorrhage	2	31–34 weeks	11
Placenta prævia	3	35–38 weeks	5
Diabetes	3	Term	1
Contracted pelvis	1		
Total	22	Total	22

weighing over 2500 g. were delivered by section at 38 weeks. By far the most important reason for section was severe pre-eclamptic toxæmia—13 cases (59%). Antepartum hæmorrhage, with or without placenta prævia, accounted for another 5 cases (23%). One in every five of the hyaline-membrane cases had been delivered by cæsarean section.

ABNORMALITIES IN THE MOTHER

There were 104 mothers of the 108 affected infants. There were 4 pairs of twins and 14 other twins whose partners survived. Thus twin pregnancy occurred in 18 of the 104 pregnancies (17%). There was one triplet in the series. 31 (28%) of the mothers were primiparous. The pregnancy had been terminated in 8 cases by artificial rupture of the membranes. In 7 cases forceps delivery had been carried out and in 6 of these severe subdural hæmorrhage had occurred in the infant. External version before delivery had been done in 2 cases. The presentation was vertex in 69 cases and breech in 17, the remainder being delivered by section.

If multiple pregnancy is regarded as abnormal, there was some abnormality during pregnancy in 69 women (66%).

In addition to the 19 instances of multiple pregnancy there were 19 cases (18%) of pre-eclamptic toxæmia. There were 11 cases of antepartum hæmorrhage, and 5 cases of rhesus iso-immunisation. There were 3 cases of severe heart-disease (1 of mitral stenosis, 1 of paroxysmal tachycardia, and 1 of patent ductus arteriosus). In 3 patients who came to premature labour there had been a threatened abortion earlier in preg-

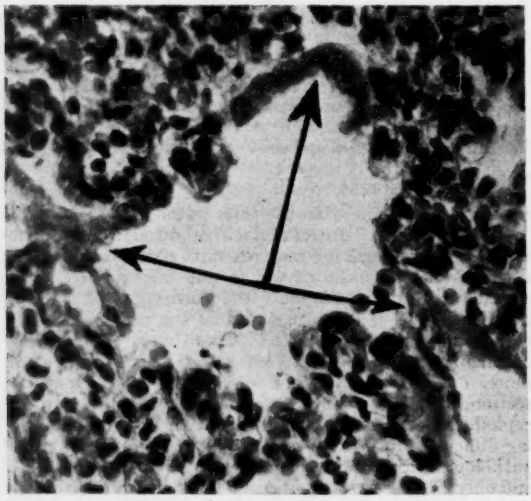

Fig. 1—Lung showing distended alveolar duct lined by hyaline membrane (all sections stained with hæmatoxylin and eosin × 500).

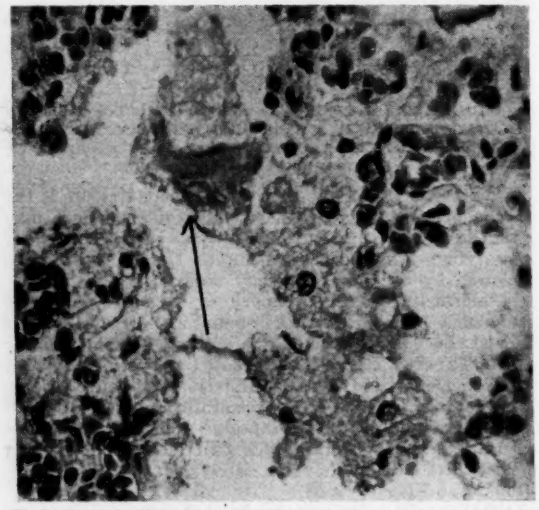

Fig. 3—Lung of stillborn macerated fœtus showing alveolar duct containing cellular debris and triangular plug of acidophil hyaline material (× 380).

nancy (2 at 8–12 weeks and one at 16 weeks). There were 3 cases of diabetes, 2 of bicornuate uterus, 2 of tuberculosis, 1 of syphilis, and 1 of nephrosis.

ILLNESS IN THE INFANT

The clinical features of hyaline membrane formation have been fully described by Donald and Lord (1953). The infant is usually premature and there may be some difficulty in establishing respiration. The air-entry is poor and after an hour or two marked rib-recession develops. There are cyanotic attacks and periods of apnœa, and the infant dies within 24–48 hours of birth.

PATHOLOGICAL CHANGES IN THE LUNGS

On naked-eye examination the lungs are bulky and dark red. They show little evidence of aeration, and both lungs and each of their lobes usually sink when placed in water. On being sliced, the lungs are seen to be airless, congested, and of the consistence of liver.

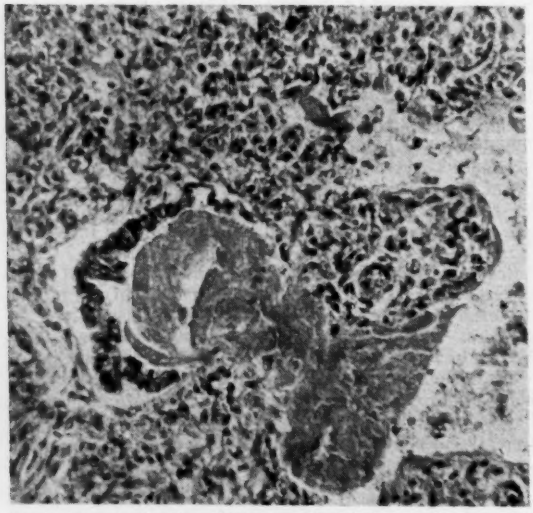

Fig. 2—Lung showing bronchiole plugged with thick hyaline material. The alveolar duct is lined by hyaline membrane (× 295).

When examined histologically, the lungs have a striking appearance. The greater part of the parenchyma is collapsed and the alveolar capillaries are engorged. Alternating with these atelectatic areas are a number of structures which appear to be overdistended. These are mainly alveolar ducts and respiratory bronchioles. On closer examination these ducts and bronchioles are seen to be lined by dense hyaline material which is strongly acidophil when sections are stained with hæmatoxylin and eosin. This is the so-called hyaline membrane (fig. 1). It is found chiefly lining alveolar ducts but also along the walls of some alveoli and small bronchioles. It does not stain for fibrin and gives a weakly positive reaction with the periodic acid-Schiff technique, indicating the presence of a polysaccharide. Often, but not always, neutral fat can be detected in this membrane. In spite of the use of a wide variety of special stains, the exact histochemical nature of the hyaline membrane has not yet been determined.

A study was made of some 450 blocks of lung tissue obtained from the 108 cases. It was quickly realised that the membrane is not quite so homogeneous in all sections as was once thought. In nearly every case some of the sections showed areas where the membrane was less evenly distributed round the walls of alveolar ducts or was fragmentary. The membrane in these areas seemed to be in process of formation and it was noticeable that it had a more precise structure. It was less homogeneous than the fully formed material and seemed to be *cellular*. In hæmatoxylin and eosin sections the cells were bright red, and the faint outline of a nucleus could sometimes be made out.

The cells were then identified as flat squames derived from the liquor amnii. Groups of these acidophil hyaline cells clump together, lose their cellular outline and cellular identity, and fuse to form the familiar acidophil membrane lining the air-spaces in the lungs. If a sufficient number of blocks are taken this progressive formation of hyaline membrane from individual squames can be traced in nearly every lung containing hyaline membrane.

The transition from squames to membrane was described by Johnson and Meyer in 1925, but little attention has been paid to this aspect of the pathogenesis of hyaline membrane. More recently Miller and Hamilton (1949) noted the presence of certain cells in the neighbour-

hood of developing hyaline membrane. They believed that these cells were responsible for the membrane formation but were unable to identify them. Since the cells were bright red and not basophil they rejected the idea that they might be squames from the liquor amnii. In my opinion, however, they are indeed squames which have become progressively more acidophil and hyaline while lying in the air-spaces of the affected lungs.

In a number of cases plugs of hyaline acidophil material are found in some of the alveolar ducts and respiratory bronchioles (fig. 2). These plugs are formed by the fusion of groups of hyalinising squames but are not dispersed round the walls of the air-spaces in the form of membrane. Nuclear remnants can sometimes be identified. These plugs may be very large, and by directly blocking the airways they may be partly responsible for atelectasis. The process of hyalinisation of squames is not confined to liveborn infants: small plugs of similar material may be found even in the macerated fœtus (fig. 3). Membrane formation does not occur before birth, however, because there is no air to disperse the squames to the periphery of the air-spaces.

Lastly, typical cornified cells derived from the liquor amnii can be found in most sections. These may be scattered in the lumen of the alveolar ducts and alveoli or may be caught in the membrane itself. They do not seem to fuse into amorphous masses like the hyalinised squames. This may be because they are keratinised and cannot undergo the chemical change necessary for complete hyalinisation.

EXPERIMENTS

These histological findings suggested that the primary factor in the production of hyaline membrane is aspiration of liquor amnii.

To substantiate this explanation samples of liquor amnii were examined by chemical and histological methods. An attempt was made to reproduce hyalinisation in vitro. And finally the reproduction of a hyaline membrane in an animal was achieved.

EXAMINATION OF SAMPLES OF LIQUOR AMNII

A total of 40 specimens from separate pregnancies was examined.

26 of these specimens were obtained at term, 10 were from post-mature pregnancies, and 4 were from premature deliveries. The amount of fluid in each specimen varied greatly, for some of the specimens were from cases of hydramnios and 4000 ml. or more was obtained. Each specimen was centrifuged and the amount of sediment measured. This amount varied from 0·1% to 7·2% by volume (average 1·9%): at 14 weeks and 25 weeks it was 0·1%, and at 32 weeks it was 0·4%, indicating that the amount of solid material increased greatly as pregnancy advanced. This was as expected. The protein content of the supernatant fluid was estimated. This varied from 40 to 300 mg. per 100 ml. with an average of 128 mg.

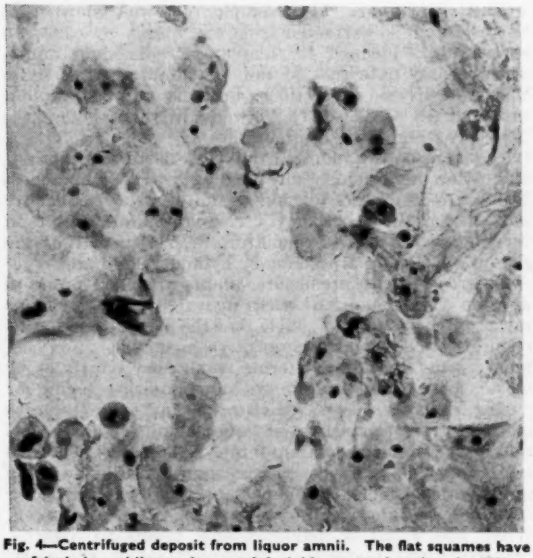

Fig. 4—Centrifuged deposit from liquor amnii. The flat squames have a faintly basophil cytoplasm and dark-blue central nucleus (× 300).

Fig. 5—Centrifuged deposit from liquor amnii after 8 days' incubation. Cells are more acidophil and nuclei have been lost (× 300).

Smears of the centrifuged deposit were fixed in alcohol and stained with hæmatoxylin and eosin. The solid material was seen to consist of innumerable large flat squames which had a slightly basophil cytoplasm and a large dark central nucleus (fig. 4). Varying numbers of cornified cells were also present. Paraffin sections of the centrifuged deposit had an appearance similar to that of the smears.

To simulate the hyalinisation which seemed to occur in the infants' lungs, samples of centrifuged liquor deposit were resuspended in an equal volume of saline and incubated at 37°C. After 7–10 days the squames had lost their nuclei and had become strongly acidophil (fig. 5). Some of the cells had coalesced to form hyaline masses not unlike those found in lung sections. The incubated material now seemed to be in a favourable state for the production of a hyaline membrane, and further experiments were made.

EXPERIMENTAL PRODUCTION OF A HYALINE MEMBRANE

During the above investigation it was noted that some samples of liquor amnii did not centrifuge well, and that the supernatant fluid contained opaque tenacious white material. This material contained numerous cornified cells but few flat squames, and this type of liquor was judged unsuitable for experiments.

When a favourable sample of liquor amnii had been obtained by high artificial rupture of the membranes under aseptic conditions, the fluid was centrifuged. Aliquot parts of the deposit were resuspended in equal volumes of sterile normal saline to which chloramphenicol 65 μg. per ml. had been added. The suspensions were then incubated at 37°C for 8 days. At the end of the incubation period smears were examined to make sure that hyalinisation of the squames had occurred. The suspensions were then centrifuged and the deposit carefully ground in a sterile virus grinder to secure a completely smooth suspension. To 0·5 ml. of this deposit was added 0·5 ml. sterile saline containing chloramphenicol 65 μg. per ml. This material was then injected intratracheally into six young albino rats (weight 175 g.). A further rat received an intratracheal

injection of 1 ml. sterile suspension of the deposit from the same fluid, but the deposit in this case had not been incubated.

The rats which had received the injection of incubated material were killed at 1, 2, 3, 5, 24, and 29 hours. The seventh rat was killed after 24 hours.

RAT 1 (killed at 1 hour).—Hyaline material and some cornified cells were plugging the bronchi and bronchioles. There was moderate collapse in the upper lobe of the right lung which was chiefly affected. Some of the alveolar ducts were lined with hyaline material.

RAT 2 (killed at 2 hours).—Hyaline material was seen in bronchi and bronchioles with a varying degree of atelectasis of the surrounding lung parenchyma. Many alveolar ducts were lined by acidophil hyaline material which was forming a membrane. Some cornified cells were seen in many areas.

RAT 3 (killed at 3 hours).—Many bronchioles were plugged by acidophil hyaline material (fig. 6). There was severe collapse of the surrounding lung parenchyma, especially in the upper lobe of the right lung where areas of collapse were evident on naked-eye examination. Some overdistended alveolar ducts were seen to be lined by acidophil hyaline membrane (fig. 7). This membrane was exactly comparable to that found in the lung of an infant (fig. 1). A moderate polymorphonuclear leucocyte reaction was observed in some areas.

RAT 4 (killed at 5 hours).—The injection had been unsatisfactory and only scattered clumps of hyaline material and cornified cells were found.

RATS 5 AND 6 (killed at 24 and 29 hours).—Findings as in rat 3. The increased duration of the experiment had little or no effect on the outcome.

RAT 7 (killed at 24 hours).—This rat received the material which had not been incubated. No areas of collapse were evident macroscopically. Histologically a few small atelectatic areas were present. Many bronchioles were plugged with cornified cells and similar cells were present in neighbouring alveoli. There was some overdistension of alveolar ducts in the collapsed areas and occasional collections of cornified cells against the duct walls. These bore a faint resemblance to hyaline membrane, but such aggregations were very small and the picture was in no way comparable to that found in rat 3.

This experiment showed that suitable treated deposit from the liquor amnii will produce an acidophil hyaline membrane when injected intratracheally into a rat. The membrane thus formed lines bronchioles and alveolar ducts in the same manner as the membrane found in the lungs of infants. It is acidophil with hæmatoxylin and eosin staining, and fat droplets were seen in frozen sections stained with Scharlach R.

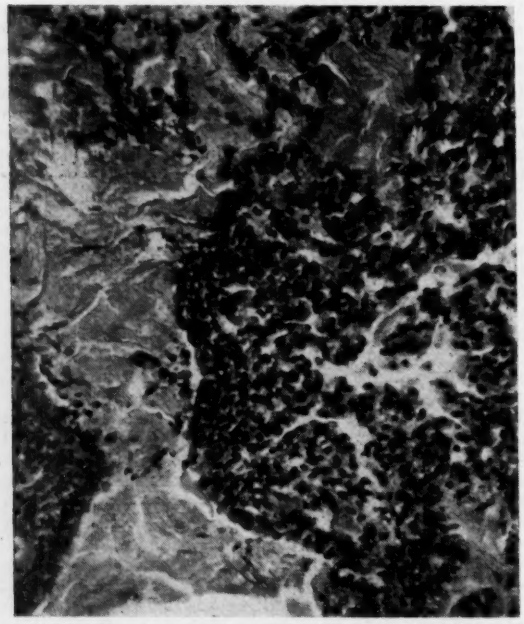

Fig. 6—Rat lung showing a bronchiole plugged by acidophil hyaline material. Surrounding lung is completely collapsed and some alveoli are also plugged with this material (× 340).

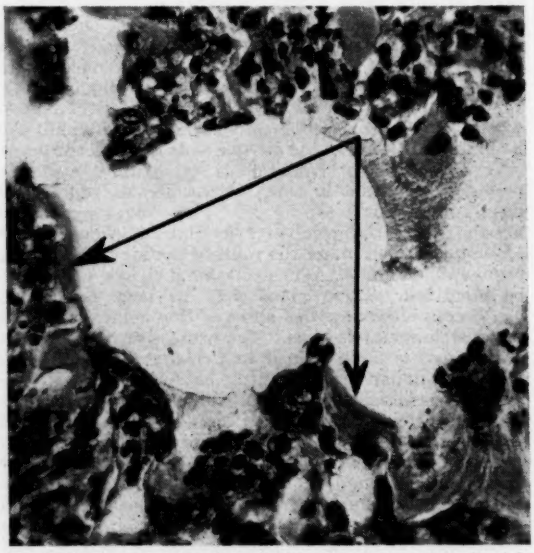

Fig. 7—Rat lung showing distended alveolar duct partially lined by acidophile hyaline membrane. Surrounding lung is collapsed and a few of the alveoli contain plugs of acidophil material (× 500).

Discussion

In this survey of 108 cases of hyaline membrane formation the majority of affected infants were premature—a finding similar to that of other workers. Of the affected infants who were born at term or post-maturely, the majority had some other pathological lesion (e.g., subdural hæmorrhage or hæmolytic disease) which made them, like premature infants, less able to deal with aspirated liquor amnii. Moreover, circumstances may sometimes have led to their inspiring an unduly large quantity of liquor. For example, it is well known that as the infant is extracted from the uterus by cæsarean section it is inclined to take a gulp of liquor amnii, and we may note that of the 108 infants in this series 22 were delivered by section; but it is only fair to point out that 16 of these (73%) were delivered before the 35th week and so were premature.

It has also been pointed out that 50 of the mothers had some abnormality of pregnancy—the commonest being pre-eclamptic toxæmia—and that a further 19 had a multiple pregnancy. These abnormalities tend to increase the risk of premature delivery and thus the risk of developing a pulmonary hyaline membrane.

The reason why premature infants are more prone to develop this membrane than mature infants remains rather obscure. It is possible that the premature infant's respiratory centre is more sensitive to changes in oxygen tension, and that intra-uterine respiratory efforts occur more easily. In response to anoxia, either before or during delivery, the premature infant may aspirate relatively large quantities of liquor amnii. The circulation in the premature infant's lung is less able to absorb aspirated fluid than is the mature infant's, and the squames deposited in the air-passages are in fact incubated in a fluid medium which allows hyalinisation to proceed. When the infant is delivered and begins to breathe, the hyalinised material is dispersed round the walls

of the air-passages in the form of a membrane. It is also possible that the liquor amnii at 28–35 weeks' gestation contains a relatively high proportion of non-keratinised squames which are unusually susceptible to the process of hyalinisation. This possibility requires further investigation.

After aspiration the squames deposited in the lung undergo progressive hyalinisation. This may be well advanced by the time the infant is delivered, since membrane formation has been detected in an infant dying 1½ hours after birth.

Farber and Sweet (1931) suggested that the membrane was formed as a result of aspiration of vernix caseosa since it gave a positive reaction for fat. But in fact many hyaline membranes contain little or no fat. If in any given case the squames involved in membrane formation are derived from vernix and covered with fat, then, and then only, will the membrane give a positive reaction with fat stains. This explains the varying results from case to case where fat stains are employed.

Blystad et al. (1951) suggest that the liquor is absorbed by the lung of the newborn infant but the protein is left behind in the air-spaces: as this protein gradually concentrates, it is laid down as a membrane lining the walls of alveoli and alveolar ducts. It is probable that such concentration of protein does occur, and that it adds to the thickness of a membrane already formed by the hyalinisation of squames. It is unlikely to be responsible for the formation of the entire membrane, which is often very thick.

Atelectasis is the cause of the infant's death. In the experiment on rats the atelectasis was largely the result of plugging of the respiratory bronchioles and mouths of alveolar ducts with thick hyaline material. In the infant this mechanism is also at work but other factors are also involved. In the infant's lung, hyaline membrane is much more widespread than any yet produced in the experimental animal. (This is partly because the infant in utero can aspirate fluid into all branches of the bronchial tree, whereas a corresponding injection of fluid into the bronchial tree of rats would probably result in rapid death from asphyxia.) The membrane covering numerous alveolar ducts in the infant's lung interferes with the gaseous exchange and prevents air reaching the more distal air-spaces, which become completely collapsed. But at birth the hyaline material is probably not in the form of a membrane and air is able to reach the distal alveoli. The pressure of air forces the material against the walls of bronchioles and alveolar ducts and this eventually seals off the distal air-sacs. This explains how some infants seem to breathe reasonably well shortly after birth, but their respiration becomes progressively more laboured until death ensues.

The present study indicates that massive aspiration of liquor amnii is the prelude to formation of hyaline membrane. The infants thus succumb to an unusual form of drowning. While the fluid is largely absorbed into the pulmonary circulation, the mud left behind in the form of hyalinised squames eventually covers the walls of the alveolar ducts and leads to death by suffocation.

Summary

Hyaline membrane was found in the lungs of 108 out of 376 liveborn infants who died in the early neonatal period.

It is suggested that this membrane is formed from squames in the liquor amnii. The liquor is aspirated into the fœtal lung and the squames undergo progressive hyalinisation and fusion.

Suitably treated deposit from human liquor amnii, when injected intratracheally into the rat, will produce a hyaline membrane in the animal's lung.

The atelectasis associated with hyaline membrane in the newborn infant is partly the result of direct obstruction of the airways by plugs of hyaline material and partly the result of air being trapped in the distal air-sacs when the alveolar ducts are sealed by membrane.

I am indebted to Dr. J. Murray for much advice and criticism. I wish to thank Dr. G. H. Lathe and his staff for undertaking the chemical investigations and for considerable help with the experiments. I am grateful to Mr. Ian Donald for much coöperation on the clinical and physiological aspects of this work, and to the obstetric staffs of Queen Charlotte's and Hammersmith Hospitals for obtaining samples of liquor amnii. The photomicrographs were prepared by Mr. E. Clark of Queen Charlotte's Hospital.

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GASTRIC RESECTION
FOR GASTRODUODENAL HÆMORRHAGE WITHOUT AN OBVIOUS ULCER

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Now that surgery plays an increasing part in the management of the bleeding ulcer, a new problem has been added to those which the surgeon has to solve during the course of operation. In some cases thorough inspection and palpation of the stomach and duodenum reveals no ulcer, and, in the absence of any other obvious cause of hæmorrhage, the surgeon has to decide whether to operate further or to close the abdomen, as in the four following cases.

Case-records

Case 1.—A woman, aged 29, with two years' history of epigastric pain coming on an hour after food and relieved by alkalis, was admitted with hæmatemesis, pulse-rate 88, blood-pressure 125/70 mm. Hg, and Hb 85%. She had another hæmatemesis next day and a blood-transfusion of two pints. Four days later bleeding recurred, and her pulse-rate was 120, blood-pressure 115/60 mm. Hg, and Hb 56%.

At laparotomy no ulcer was found. Gastrotomy revealed bleeding from multiple small acute erosions. In view of the patient's age gastric resection was not considered advisable. Two pints of blood was given during the operation. Eight days later the Hb was 56% and the patient was given two pints of blood. She was discharged on the eighteenth day after operation.

Case 2.—A man, aged 53, who had had epigastric pain 1–1½ hours after food for three weeks, had a hæmatemesis. His pulse-rate was 70, blood-pressure 110/70 mm. Hg, and Hb 38%. He was given a blood-transfusion of three pints. Bleeding recurred four days later, and he was given three pints of blood and prepared for operation, during which two further pints was transfused.

At laparotomy no ulcer was found. Partial gastrectomy was done, and the patient made an uneventful recovery. Dr. James McMurray reported on the operation specimen as follows: "Specimen of lower part of stomach shows acute gastritis, most marked in the prepyloric zone. The microscopical preparation shows acute inflammatory change involving mucosa, submucosa, and muscle. There is also much fibrosis in the submucosal layer, with diffuse chronic inflammatory cell infiltration of mucosa and submucosa. The stomach wall is intensely engorged with blood and is œdematous. The findings indicate acute gastritis superimposed on chronic gastritis."

Case 3.—A man, aged 77, with no obtainable history, was admitted collapsed, pale, and dyspnœic, with pulse-

rate 124, blood-pressure 115/45 mm. Hg, and Hb 26%. Three pints of blood was given. Next day his Hb was 35%, and he was given a blood-transfusion of two pints. Two days later a melæna stool was obtained on digital examination of the rectum. Although a further three pints of blood had been given the Hb was 43%. Preoperatively and during operation three more pints of blood was given.

At laparotomy no ulcer was found. Gastrotomy was not done. The patient died three days later. Dr. James McMurray reported: "The stomach mucosa shows much autolysis. There are two ulcers on the posterior wall about the mid-third of the stomach. One is large ($2 \times 1/2$ in.) and ellipsoid in outline. The other is small ($1/4$ in.). Both show ulceration down to the muscle layer. A small artery protrudes at the edge of the larger ulcer and is the probable source of bleeding."

Case 4.—A woman, aged 73, known to be hypertensive and subject to epigastric pain after food for two years, had a hæmatemesis. Her pulse-rate was 108, blood-pressure 104/50 mm. Hg, and Hb 50%. She was given a blood-transfusion of three pints. Two days later she passed bright blood in a melæna stool. She then had a pulse-rate of 102, blood-pressure 100/50 mm. Hg, and Hb 40%. She was transfused with the cells of four pints of blood.

At laparotomy no ulcer was seen. Partial gastrectomy was done, and the patient recovered. The operative specimen contained a large ulcer, $1 1/2 \times 3/4$ in., down to, but not involving, the muscle layer.

Comments

Case 1 was the only one in which gastrotomy was done. When the lesion was revealed a decision against gastric resection was made in view of the patient's youth. She made a good recovery and required only a further two pints of blood between operation and discharge from hospital. However, these cases are not always so uneventful. Tanner (1950) reported a similar case in a man, aged 26, with hæmorrhage from erosive gastritis, in whom bleeding continued after ligation of the right and left gastric and right and left gastro-epiploic arteries and partial gastrectomy became necessary.

The pathology in the specimen removed from case 2 was identical with that of case 1. In case 2, however, gastrotomy had not been done, partial gastrectomy being undertaken though no ulcer was found. In view of this patient's age I believe that this treatment is correct, and I would have gone on to this operation if gastrotomy had revealed the lesion.

In case 3 gastrotomy would possibly have disclosed the ulcer, because the stomach did not contain blood-clot but in my opinion the error was in not proceeding to partial gastrectomy notwithstanding the lack of an obvious ulcer. The patient was a very poor surgical risk, and it is doubtful if his life could have been saved; nevertheless he did not receive the benefits of adequate surgery. Case 4 had an identical lesion, again not detectable on inspection and palpation, but with case 3 in mind gastric resection was done, and the result of examination of the specimen amply justified this action.

Discussion

In dealing with patients aged more than 50 and in the absence of any other causal lesion, opinion is increasingly in favour of partial gastrectomy if no ulcer is found at emergency operation for hæmatemesis or melæna. The surgeon has, however, two other possible courses of action, gastrotomy or merely to close the abdomen.

The value of gastrotomy is very variable; I have found it of little value, because it is difficult to examine the entire mucous surface of the stomach, especially in the presence of blood-clot, which adheres to the stomach wall and proves difficult to remove sufficiently thoroughly to give a complete view. Ogilvie et al. (1952) write:

"Incision of the stomach and duodenal wall and search inside the viscus is an unsatisfactory procedure, for it is impossible to search adequately all the large potential area of bleeding; and the slender prospect of a positive result does not justify the soiling and further loss of blood that the method entails."

Closure of the abdomen without further operation, as in case 3, is futile; the patient has been put to the risk of operation but denied the possibility of benefit from it. Bleeding ulcers are responsible for about 90% of massive intestinal hæmorrhages, and in those cases in which operation is considered necessary if no lesion is found gastric resection holds the best hope of recovery. Ogilvie et al. report having done partial gastrectomy on seven patients in whom no ulcer was found; the specimens revealed shallow ulcers or multiple erosions. Downie (1952) reported six similar cases. Tanner (1950) states:

". . . If bleeding is of really great severity, and no lesion is found, then gastrectomy is advisable, for it removes four-fifths of the erosive area and partially devascularises the remnant."

Ives (1949) asserts that in these circumstances gastrotomy provides no guarantee that an ulcer may not be missed; that simply to close the abdomen is a counsel of despair; and that a high partial gastrectomy is the correct procedure. My experience confirms the validity of these conclusions.

Conclusions

Partial gastrectomy is the operation of choice if at emergency laparotomy for hæmatemesis or melæna no causal lesion, ulcer or other, is found in a patient aged more than 50.

Gastrotomy is not very helpful. It is unnecessary in patients aged more than 50, for whom gastrectomy should be done. In young patients, as in case 1 reported here, gastrotomy may be of value in deciding against gastric resection, but note must be taken of the case reported by Tanner (1950) and cited above.

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CONTROLLED HYPOTENSION WITH ARFONAD IN NEUROSURGERY
WITH SPECIAL REFERENCE TO VASCULAR LESIONS

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SINCE the methonium compounds were introduced into anæsthetic practice by Enderby (1950) and Davison (1950) there has been much controversy about their use. It is our view that induced hypotension has not only made possible neurosurgical operations which could not otherwise be attempted because of obscuration of the operation site by bleeding but also reduces the risk of certain intracranial operations.

By the use of hypotensive drugs at operation, intracranial pressure can be lowered, thereby diminishing the risk of brain damage by herniation through the dural opening. A further advantage is gained in reducing the operating-time, the amount of anæsthetic required, and blood-loss. In the improved operating-conditions surgical trauma is lessened. Recovery from surgery is also quicker.

Though possessing the above-mentioned advantages, the methonium compounds are lacking in one important respect: the blood-pressure cannot be quickly raised and then lowered again at will. The initial fall in blood-pressure may be greater than that needed in the preliminary stages of surgery; whilst at a later stage it may prove impossible to lower the blood-pressure quickly on demand to the level required by the surgeon at a particular moment for a specific purpose. It seems as though a tolerance to the methonium compounds develops, with the result that, after the initial dose, repeated injections have less effect. The use of procaine amide together with hexamethonium bromide (Mason and Pelmore 1953, Aserman 1953) overcomes this difficulty to some extent.

When Magill et al. (1953) reported on the use of the short-acting hypotensive agent 'Arfonad,' it seemed probable that this drug might produce better control of the blood-pressure than did the methonium compounds. Favourable reports on the use of arfonad in surgery were later published by Nicholson et al. (1953) and Sadove et al. (1953).

Experimentally produced acute toxicity varies according to the route of administration and the species of animal used (Randall et al. 1949).

In March, 1953, we obtained a supply of arfonad for trial. Our conclusions concerning its value are based on 52 craniotomies done during hypotension induced with it. These operations were done for intracranial disorders which can be classified as follows:

		Anæsthetists				
		S.A.	*D.A.*	*D.B.*	*C.S.*	*E.deW.*
1. Vascular abnormalities:						
Aneurysm	9 cases	6	0	2	0	1
Angioma	8 cases	2	3	1	1	1
2. Meningioma	9 cases	2	6	1	0	0
3. Glioma	13 cases	6	5	1	0	1
4. Miscellaneous	13 cases	2	10	0	0	1

Arfonad is a vasodepressor with ganglion-blocking and direct vasodilator activity. Its chemical name is *d*-3, 4-(1′, 3′-dibenzyl-2′-ketoimidazolido)-1, 2-trimethylene thiophanium *d*-camphor sulfonate.

Technique of Administration

The method of administration we now use is as follows:

After induction with thiopentone, used with a relaxant, intubation is done and an intravenous drip set up. The blood-pressure is recorded. The table is now tilted into 25°–30° reverse Trendelenburg position. About two minutes later the blood-pressure is again recorded. Blood-pressure estimation, after tilting, is of great importance because the fall in pressure is very variable: and it is a valuable guide to the amount of hypotensive drug required. After the scalp has been cleaned, the arfonad drip is started, at first slowly to enable the patient's reaction to be observed. For the opening stages a systolic pressure of about 80 mm. Hg is considered enough to reduce hæmorrhage.

When the dura has been opened, the pressure is further lowered (to 60–70 mm. Hg), thereby diminishing intracranial tension and the surgeon's difficulties. The blood-pressure is maintained at this level unless and until a demand is made to decrease it further—e.g., at the moment of excising an aneurysm.

In the later stages of operation, before the dura is closed, the blood-pressure is returned to near normal, or at any rate to 100 mm. Hg, by stopping the infusion and levelling the table. By so doing the bleeding points are seen and controlled and the risk of postoperative blood-clot formation is reduced. In the final stages, but only after replacement of the bone flap, so that extradural bleeding points can be observed and controlled, the blood-pressure is again lowered to about 80 mm. Hg to prevent blood-loss from the skin flap.

Anæsthesia is maintained with nitrous oxide and oxygen, supplemented by intravenous pethidine. Small doses of relaxants are also given if coughing is anticipated.

Results

Hæmorrhage

During operation.—In only 2 of the 52 craniotomies was blood-loss sufficient to warrant blood-transfusion. In the 1st case a large suprasellar meningioma was removed which produced bleeding from the internal carotid artery. The 2nd case was in an infant, aged 18 months, subjected to hemispherectomy. Of the 17 craniotomies done for cerebrovascular abnormalities, 9 were for aneurysm. In very few of these cases would radical surgery have been possible without some form of induced hypotension. None of these cases required blood-transfusion. The remaining 8 operations were for angioma, all of which would probably have required blood-transfusion before the advent of hypotensive techniques, as would most of the cases with meningiomas.

Postoperative hæmorrhage.—In 2 cases, within forty-eight hours of craniotomy, the wound had to be reopened for removal of postoperative blood-clot. The incidence of this complication is not high. Both of these cases occurred before the precaution was observed of raising the blood-pressure to normal and arresting all extradural bleeding before replacement of the bone flap. In the last 30 cases, since this procedure has been adopted as a routine, no postoperative clot has been observed.

Operative Mortality

Of these 52 patients undergoing major craniotomy, 4 died after the operation: 3 with meningiomata died within forty-eight hours of the operation; and 1 patient, who had an anterior communicating aneurysm and was bleeding at the time of operation, died on the tenth postoperative day from surgical occlusion of both anterior cerebral arteries. In all of the 3 fatal cases of meningioma there was a very large suprasellar tumour extending backwards into the middle fossa and the hypothalamic region; 1 of them had been considered inoperable in another hospital and was attempted at the express wish of the relations. In each case a major blood-vessel (in 2 the internal carotid artery, and in 1 the middle cerebral artery) was damaged and had to be clipped. These 3 patients were women aged 72, 62, and 55 and poor subjects for such severe operations.

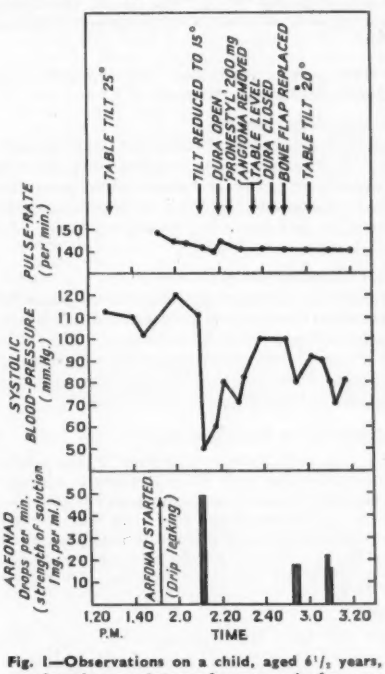

Fig. I—Observations on a child, aged 6½ years, undergoing craniotomy for removal of a posterior parietal angioma. Response was at first unsatisfactory because the drip was "leaking."

In none of these cases was there reason to believe that induced hypotension played any part in the fatal outcome.

Failure to Induce Hypotension

All the patients to whom arfonad was administered responded by a fall in blood-pressure.

In 1 case only was there failure to lower the blood-pressure to the level required by the surgeon; nevertheless very adequate

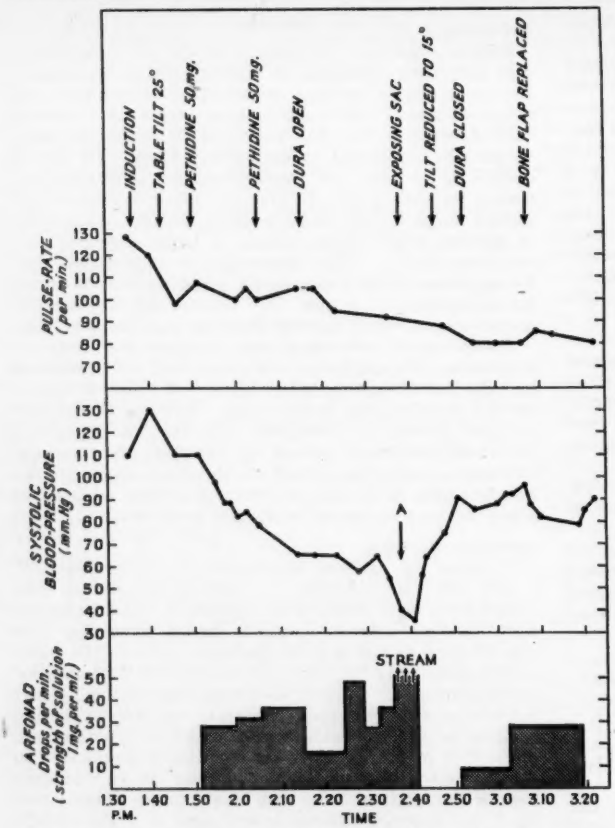

Fig. 2—Observations on a woman, aged 32, undergoing craniotomy for excision of aneurysm of middle cerebral artery. The systolic blood-pressure was lowered to 36 mm. Hg for two minutes (A) while the neck of the aneurysmal sac was being closed

operating-conditions were provided by maintaining the patient's blood-pressure at 80 mm. Hg.

Failure to Maintain Hypotension

After the blood-pressure had fallen, the hypotensive state was easily maintained. In 2 cases only was it necessary to supplement the arfonad with procaine amide: in case 3 to keep the blood-pressure unusually low, and in case 1, a girl aged $6^1/_2$ years, to lower the pulse-rate (see below).

Failure to Restore Blood-pressure

Although arfonad is short-acting, the blood-pressure was seldom restored as soon as the infusion was stopped. There was usually a lapse of 1–20 minutes. This disadvantage, with 2 exceptions, was overcome by flattening the table. In 2 cases 'Methedrine' 5 mg. was injected to hasten the return of blood-pressure to normal.

Illustrative Case-records

Case 1.—A girl, aged $6^1/_2$ years, had four intracerebral hæmorrhages during the past two years. Carotid arteriography showed what proved to be an angioma in the parieto-occipital region. At 1.52 P.M. the arfonad drip was started (fig. 1). After three minutes the systolic blood-pressure had risen from 102 mm. to 120 mm. Hg and the patient was coughing. It was then realised that the drip was leaking. Once this was rectified at 2.10 P.M., a very satisfactory response to the arfonad was obtained.

This flexibility of the blood-pressure to suit the surgeon's requirements could not have been obtained with the methonium salts, particularly in a child of this age.

Case 2.—A woman, aged 32, underwent craniotomy for excision of an aneurysm of the middle cerebral artery. After the aneurysmal sac had been exposed its neck was found to be too broad to close with a single tantalum clip. It proved necessary deliberately to divide part of the aneurysmal neck and to close it afterwards with a second clip. When the sac was opened quite a severe hæmorrhage took place. For this reason, and to facilitate closing the open neck of the sac, the blood-pressure was rapidly lowered to 36 mm. Hg for two minutes (A on fig. 2). After this closure was effected, and before the dura mata was closed, the systolic blood-pressure was restored to 90 mm. Hg to arrest all bleeding points. This elevation of the systolic blood-pressure from 36 mm. to 90 mm. Hg was effected in ten minutes after stopping the arfonad drip and reducing the tilt of the table to about 15°.

Case 3.—A woman, aged 47, was admitted on the morning after an intracerebral hæmorrhage the night before. This was the fourth subarachnoid hæmorrhage in the past three weeks. She was thought to be bleeding on the day of operation, which was the day of admission.

At *operation* a large intracerebral clot was found, the bleeding site being an aneurysm situated 1 cm. from the origin of the right middle cerebral artery. It was impossible to dissect this out; so four clips were placed on the wall of the aneurysm to obliterate it. To make this possible it was essential to keep the blood-pressure low in case of hæmorrhage. The systolic blood-pressure was maintained between 56 mm. and 70 mm. Hg for this stage of the operation by running the arfonad drip in a continuous stream, and was maintained by increasing the tilt of the table to 35°–40° reverse Trendelenburg, as well as by giving 500 mg. of 'Pro-

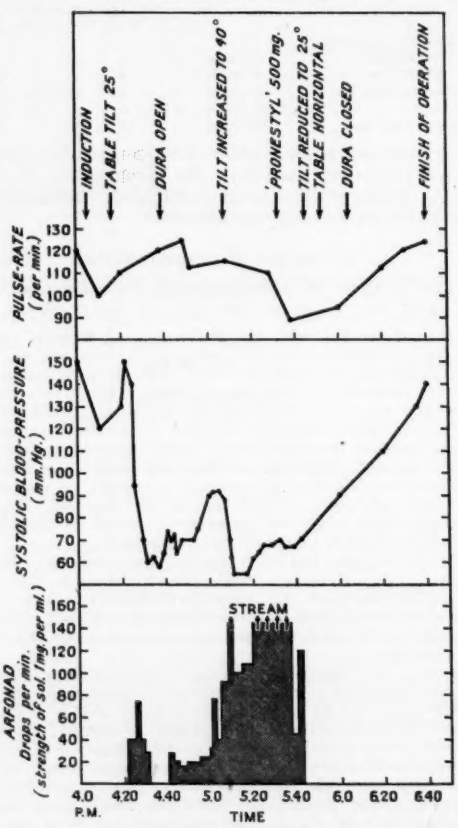

Fig. 3—Observations on a woman, aged 47, undergoing craniotomy for aneurysm of the middle cerebral artery and removal of subdural clot. The blood-pressure was kept low with arfonad supplemented by pronestyl while four clips were being placed on the wall of the aneurysm to obliterate it.

nestyl' to enhance the effect of the arfonad (fig. 3). Altogether this patient received 600 mg. of arfonad. Her systolic blood-pressure returned from 70 mm. to 90 mm. Hg eighteen minutes after the drip was stopped, and was back to her normal level of 140 mm. by the end of the operation, forty minutes later.

This patient was large and healthy, and it would have proved very difficult, if not impossible, to produce these flexible results with methonium salts.

Conclusions

For operations on the cerebral blood-vessels hypotension is essential. For this purpose arfonad is superior to the methonium compounds; for, being short-acting, it gives the anæsthetist greater control of the blood-pressure, but still reduces the hæmorrhage and intracranial tension to the satisfaction of the surgeon.

However, it must be emphasised that arfonad is no answer to the dangers of hypotension, and should only be used in selected cases where the risk is necessary to reduce the greater risk of the operation.

Summary

The results are reported of a trial of the hypotensive agent arfonad in 52 major craniotomies.

The advantages of arfonad over methonium compounds are discussed.

The particular value of arfonad in the vascular surgery of the brain is emphasised. Records of 3 cases made during operation are illustrated.

All these craniotomies were done by one of us (W. McK.). The anæsthetists were Dr. Donald Blatchley, Dr. David Aserman, Dr. Sheila Anderson, and Dr. Edith de Winter, of the neurosurgical unit, St. George's Hospital, and Dr. Aserman and Dr. Cyril Sanger, of the National Hospital for Nervous Diseases. Roche Products Limited kindly supplied the arfonad.

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RESULTS OF TREATMENT OF INFANTILE CEREBRAL PALSY

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ON an average 130 cases of motor retardation are yearly referred to the cerebral palsy unit of Queen Mary's Hospital. The 200 cases discussed here are now under treatment; they were referred at ages between 6 months and 15 years (average age $6\frac{1}{2}$ years).

Treatment was provided for those with motor dysfunction, either in the unit or in the child's home. Where home treatment was instituted the parents were carefully instructed in the management of their children throughout the day, and progress was checked monthly at our cerebral palsy advice clinic, held by courtesy of the authorities at Lambeth Hospital. Cases selected for inpatient treatment at Queen Mary's Hospital were usually of normal intelligence, but with grossly disabled motor systems or poor home facilities or both.

Treatment is directed towards attainment of normal activity, including speech; but traditional methods of physiotherapy, occupational therapy, and speech therapy are not employed, and no traditional apparatus, drugs, or surgery are used. Educational facilities are provided for all children over 3 years of age who are inpatients, and these are as nearly as possible those which are provided in ordinary schools. The teachers in the cerebral palsy classes are, like the rest of the staff, specially trained in the management of motor-deficient children of this type.

"Intelligence testing" of any subject must of necessity be inferior to the test of intelligence afforded by the whole life situation. The value of formal tests must depend on the skill of the tester; this skill becomes of even greater importance where there is defect of the motor apparatus, or of sight or hearing. Thus, one educational psychologist, engaged in research into the educability of the cerebral palsied has given up verbal tests, and now bases her evaluation of the intelligence quotient on tests of motor competence (Dunsdon 1952). But this is to exchange one component of the thing to be tested for another. Certainly intelligence can only be expressed through the motor mechanism; but if this mechanism is defective tests of its competence will not accurately reflect the intelligence using it, and moreover the intelligence quotient will shift with changes in motor performance. We base our estimate of intelligence on the response of the child to the life situation itself (Collis 1953).

In the 200 cases here discussed, mostly sent to us with a diagnosis of spasticity and mental retardation, our findings have been as follows:

A group of 26 were found to have unsteadiness of movement (athetosis), and to be of normal intelligence.

"Athetosis" is not properly a diagnostic term: originally it was applied to the symptom which Dorland's *Medical Dictionary* describes as "a constant recurring series of slow vermicular movements . . ." Nowadays it is often used as a diagnostic term to cover many different kinds of cases, including cases of abnormal movement in mental defectives, unmodified reflexes in spastic patients, variable rigidity, and even the unsteadiness of ataxia. Here I am using "athetosis" only to cover that group of cases in which the *sole* neurological abnormality (apart from occasional deafness) is a distortion of normal movement (which may or may not be "vermicular").

Of these 26, 14 are now up to normal standard for their ages and are attending ordinary schools; 7 are up to normal standard for their ages in the cerebral palsy class at Queen Mary's Hospital; 4 remained at special schools for handicapped children, where they were already established; and 1 attends a school for the deaf and is up to normal for his age.

Of the remaining 174 cases, 25 were found to be cases of variable rigidity and mental deficiency, and these 25 children attend special schools for backward children, or remain at home. There were 3 cases of ataxia, and one of these attends a school for the deaf where he is up to normal standard, while the other 2 are mentally subnormal and are taught at home.

The remaining 146 were cases of spasticity, and 6 of them are still inpatients in the unit. Of these 6, 2 are of normal intelligence and attend the cerebral palsy class, 2 who are mentally subnormal also attend this class, and 2 are not yet of school age. Among the outpatients, 8 attend normal schools, and 132 (including 16 hemiplegics) attend special schools or have home tuition; all these are mentally subnormal in greater or lesser degree.

This gives an estimate of normal intelligence in only 20% of cases referred, and this 20% includes all those with athetosis (26), 13 with spasticity, and 1 with ataxia. Of the remainder (mentally subnormal) 67% had spasticity, 12% had variable rigidity, and 1% had ataxia.

In cases of infantile cerebral palsy, a classical clinical picture is expected to develop, but our 12-year study has shown that the appearance or non-appearance of classical neurological signs, deformity, and motor dysfunction largely depends upon the physical handling the children receive in the early stages. It has been found that where intelligence is normal the young child can learn to use his defective motor system in a normal manner and deformity does not develop. It has also been found that even where

gross dysfunction and deformity are already established, the condition of affected children can be greatly ameliorated, and those of normal intelligence become able to express their mental processes intelligibly in movement, including speech. Those of subnormal intelligence, though their achievements are limited by their mental incapacity, become efficient in greater or lesser degree and often cease to be a grave burden to their families.

I am grateful to Dr. C. D. S. Agassiz for permission to publish data obtained at his hospital, Queen Mary's Hospital for Children.

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EFFECTS OF INHALATION OF SULPHUR DIOXIDE BY MAN

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IN the London fog of December, 1952, the densest concentrations of sulphur dioxide were 1·339 p.p.m. and of smoke 4·46 mg. per c.m. on Dec. 7 and 8, when the fog was at its worst (Scott 1953, Logan 1953). Both values are much greater than normal for that season of the year. In this connection the results of our laboratory studies of the respiratory response of man to low concentrations of sulphur dioxide are of interest.

METHODS

Concentrations of sulphur dioxide were established in a 2 c. ft. 'Lucite' chamber by metering in diluted sulphur dioxide (1% in air) from a steel cylinder. The sulphur dioxide joined the main air-stream (5 c. ft. a minute) before entering the chamber so that mixing was achieved. The concentrations of sulphur dioxide in the chamber were measured by the conductivity method of Thomas and Abersold (1929).

The subjects of the experiment were at rest and breathed through a face-mask. A slide-valve hidden from their view enabled the mask to be connected to the chamber without their knowing it. The volume of expired air was measured in a spirometer, which was read every minute. The respiratory rate and pattern were obtained with a pneumotachograph (Silverman and Whittenberger 1949), a device for instantaneous recording of air-flow during breathing. It consists of a fine 'Monel' wire screen mounted in a face-mask. The screen measures the movement of air by measuring its velocity and volume through the screen by pressure loss or resistance of the screen, which bears a linear relation to the flow. The pressure corresponding to the flow is measured with a thin membrane whose movement is transmitted to an electrical recording device. From the direct tracing the whole breathing pattern, inspiratory and expiratory flow-rates, and other breathing characteristics can be obtained.

RESULTS

The ability to detect sulphur dioxide varied greatly from person to person. Concentrations of 1–2 p.p.m. were not usually detected. At 5 p.p.m. most people complained of a slight feeling of dryness in the throat and upper respiratory passages, but they could not actually "smell" it. One person found 5 p.p.m. so objectionable that the exposure was stopped after five minutes, whereas others barely noticed it. People exposed to 6–8 p.p.m. definitely detected sulphur dioxide in the air but said they became accustomed to it as the exposure continued.

Fourteen normal people exposed to sulphur dioxide 1–8 p.p.m. showed changes in respiration and pulse-rate. Tidal volume decreased, respiratory rate increased, minute volume remained unchanged, and pulse-rate increased.

Fig. 1 shows the average values of tidal volume, respiration-rate, and pulse-rate for five people exposed for ten minutes to 5 p.p.m. The same pattern of changes was followed by each person. Tidal volume fell sharply at first and then levelled off at about 25% below the control value. Respiration increased by three or four breaths a minute, and pulse-rate by eight or nine beats a minute, during exposure. These values all returned to the control levels when exposure ceased.

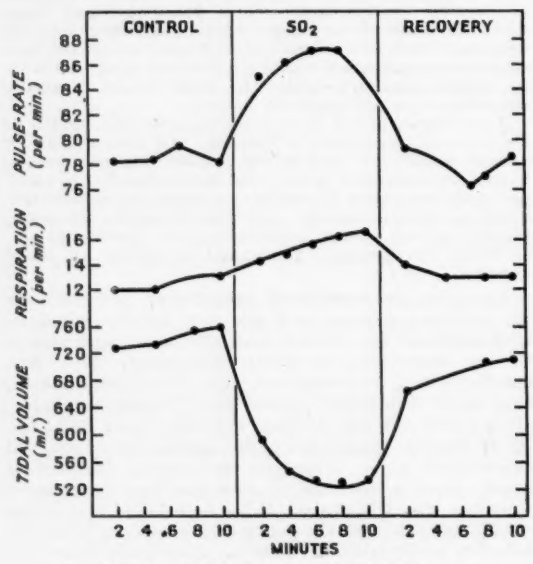

Fig. 1—Effects of inhalation of sulphur dioxide 5 p.p.m.

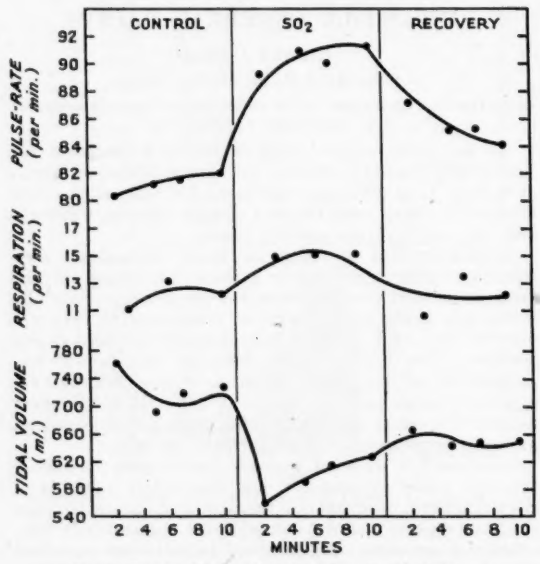

Fig. 2—Effects of inhalation of sulphur dioxide 1 p.p.m.

Fig. 2 presents the average of four people exposed to 1 p.p.m. It is at once plain that the pattern of changes was the same as that for 5 p.p.m. The tidal volume decreased during the first two minutes' exposure to about 25% below the control levels. During the remainder of the exposure period, however, it increased again to about 15% below control values.

Fig. 3 shows respiratory tracings obtained from two people, one exposed to 2 p.p.m. and the other to 1 p.p.m. The increased respiratory rate is indicated. The area under the curves may be taken as an indication of tidal volume, although this method was not used to measure it.

The people so far discussed had no routine exposure to sulphur dioxide. To determine whether the same effects would be obtained from people regularly breathing atmospheres containing sulphur dioxide, two men from an industrial plant were exposed to 5 p.p.m. These men worked tending boilers in which an oil of high sulphur content was burned. The concentrations of sulphur dioxide in their working environment often exceed the

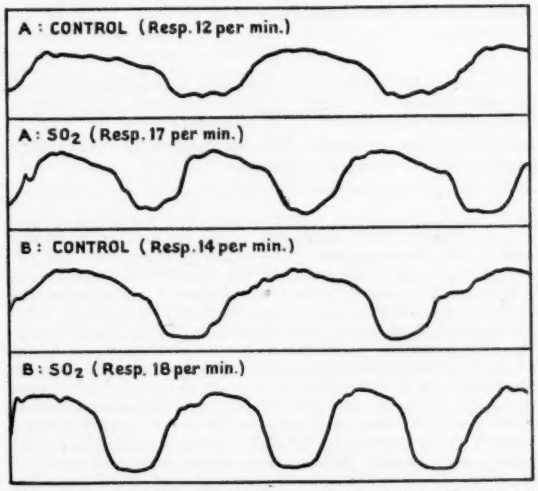

Fig. 3—Pneumotachograph tracings. Upper portion of tracing is expiration, lower portion is inspiration.

American maximal allowable concentration of 10 p.p.m. intended for eight-hour exposures (*Archives of Industrial Hygiene and Occupational Medicine* 1952). Fig. 4 shows the results of the tests on these two men. Apart from a possible transitory increase in respiration, the changes observed in the other people were not shown by these men. This seems to show that respiratory and cardiac responses to sulphur dioxide were less in them than in people who had not previously been exposed to it. Haggard (1923) states that the apparent tolerance of such men is due to chronic inflammation of the upper air-passages, producing a tenacious mucus which acts as a protective coating. In his opinion deadening of the reflex has removed one measure of protection.

DISCUSSION

Sulphur dioxide in concentrations as low as 1 p.p.m. can produce shallow rapid respiration and increased pulse-rate. We have previously shown (Amdur et al. 1952) that comparable respiratory changes are produced by sulphuric-acid mist in concentrations as low as 0·35 mg. per c.m. Although we have seen no report of concentrations of sulphuric-acid mist during the peak of the London fog, this substance is a known constituent of such fogs.

All the subjects of our experiments were healthy men aged 28–58. No persons with pre-existing respiratory or cardiac disease were studied.

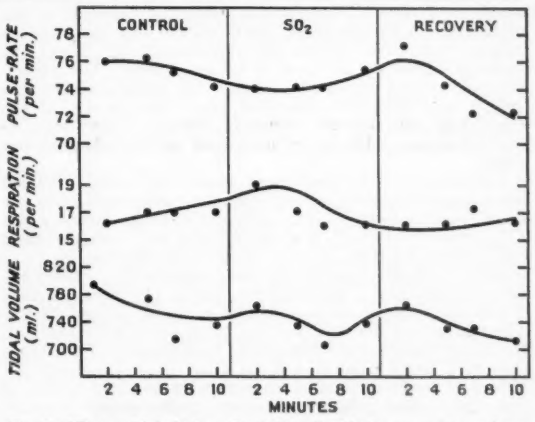

Fig. 4—Effects of inhalation of sulphur dioxide 5 p.p.m. by workmen (A and B) regularly exposed to high concentrations of this gas.

SUMMARY

Normal people inhaled sulphur dioxide 1–8 p.p.m. through a face-mask for ten-minute periods.

In all of them shallower and more rapid respiration and increased pulse-rate were observed during exposure.

Similar but slighter changes were observed with sulphur dioxide 1 p.p.m.

Men who worked daily in atmospheres containing sulphur dioxide 10 or more p.p.m. showed no changes when exposed to 5 p.p.m.

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POLYCYTHÆMIA WITH FIBROIDS

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THE following case is recorded because manifest and serious polycythæmia disappeared immediately after removal of large uterine fibroids by hysterectomy together with bilateral salpingo-oöphorectomy.

CASE-RECORD

A married woman, aged 48, was referred to the outpatient department on Feb. 14, 1951, with two years' history of attacks of transient blurring of vision, soreness of the eyes, and muscular fatigue. She had always been of high colour, but this had noticeably increased during the previous two years. She denied headache or dyspnœa. No history of drug treatment or exposure to chemical agents was obtained. Menstruation had been irregular for two years, with scanty loss, and at no time had she had menorrhagia. Her previous health had been good, and there was no relevant family history.

On examination she was small (weight 100 lb.), with congested face and bloodshot eyes. Her whole skin was deep reddish blue. Her retinæ were deeply coloured and the retinal veins engorged. Her abdomen contained a large

mass rising from the pelvis and extending upwards to the umbilicus. A further mass, freely mobile and as big as an orange, was present in the left hypochondrium. There was no enlargement of the liver or of the spleen. The cardiovascular system appeared normal; the blood-pressure was 160/90 mm. Hg. No abnormal signs were found in the respiratory and central nervous systems. There was no finger-clubbing. The urine contained neither albumin nor sugar.

Investigations.—A blood-count showed red cells 7,280,000 per c.mm., Hb 148%, colour-index 1·0, white cells 5800 per c.mm. (polymorphs 78·5%, eosinophils 1·5%, lymphocytes 15%, monocytes 5%); platelets 125,000 per c.mm.; packed cell volume 72 c.cm.; mean corpuscular volume 88 c.μ.; mean corpuscular hæmoglobin concentration 30%; bleeding-time 1½ minutes; clotting-time, initial 6½ minutes, final 7 minutes; prothrombin-time 18·5 sec. with control 25 sec. The plasma volume was 2040 ml. (Evans-blue method)—i.e., the blood volume was 7286 c.cm. Radiography of the chest showed "lungs striated, but no other chest abnormality." No evidence of arteriovenous aneurysm was found on screening the chest. The long bones were radiologically normal. These results excluded polycythæmia vera but did not reveal any of the recognised causes of secondary polycythæmia.

Operation.—Laparotomy was done by Prof. Hugh C. McLaren on March 27, 1951, and the abdominal masses were found to be multiple fibroids, one of which was pedunculated and freely mobile. Total hysterectomy, bilateral salpingo-oöphorectomy, and appendicectomy were done without untoward incident or excessive hæmorrhage. The spleen was not enlarged.

Postoperatively the patient's recovery was uneventful. Pathological examination confirmed the nature of the tumours.

Date	Red cells per c.mm.	Hb %	Colour-index	White cells per c.mm.	Platelets per c.mm.	Hæmatocrit %
Jan. 24, 1951*	7,640,000	140	0·92	6700	..	..
Feb. 14, 1951	7,770,000	148	0·96	6600	161,000	..
March 2, 1951	7,430,000	148	1·00	6100	159·000	..
March 5, 1951	7,280,000	148	1·00	5800	125,000	72
March 27, 1951			Laparotomy			
April 3, 1951	5,580,000	114	1·02	..	..	..
April 9, 1951	5,580,000	113	1·01	..	..	..
April 11, 1951	5,620,000	110	0·98	..	..	..
May 23, 1951	6.110,000	112	0·93	..	..	..
July 25, 1951	4,190,000	84	1·00	..	..	..
Sept. 27, 1951	5,020.000	100	1·00	5600	258,000	..
Nov. 21, 1951	4,600,000	92	1·00	6500	..	..
Jan. 30, 1952	4,840,000	94	0·97	6400	218,000	..
July 16, 1952	5,110,000	102	1·00	5700	..	..
Jan. 21, 1953	4,750,000	92	0·97	7700	238,000	43

* This count was made at All Saints' Hospital, Bromsgrove, Worcs.

A week after operation the hæmoglobin value had fallen to 114%, and it continued to fall to normal levels. Repeated blood-counts have shown no recurrence of polycythæmia during the last twenty-two months (see table). The patient's symptoms have been completely relieved.

COMMENTS

We have been unable to find any published report of an association of secondary polycythæmia with uterine fibroids, nor any record of its complete relief by surgical removal of the tumours. We can suggest no satisfactory explanation of this phenomenon.

Medical Societies

ASSOCIATION OF CLINICAL PATHOLOGISTS

THIS society met in London on Oct. 1–3. Dr. E. N. DAVEY (Gloucester) was appointed president-elect. The chairmen at the various sessions were Prof. Matthew Stewart, Colonel L. R. S. Macfarlane, Prof. R. Knox, Dr. J. V. Dacie, Prof. J. Heimbeck (Oslo), Prof. R. J. V. Pulvertaft, Mr. C. P. Stewart, D.SC., and DR. H. B. May.

Nævi and Malignant Melanomas

SOPHIE SPITZ and ARTHUR C. ALLEN (New York) discussed the clinicopathological correlation of nævi and malignant melanomas. Their many beautiful illustrations were chosen to show how difficult it may be to confirm or exclude malignancy in pigmented tumours. After presenting their classification and describing the various clinical and histological types, they reviewed the evidence in support of humoral activation and referred to the receptivity of the newborn to secondaries transmitted from the mother. By contrast only two instances of primary melanocarcinoma had been recorded in infants, and in neither case was the evidence satisfactory.

GEORGIANA BONSER (Leeds), who opened the discussion, referred to the part played by trauma in causing malignant transformation. Dr. ALLEN believed that it was very commonly held that trauma of a nævus was fraught with danger, but that in practice it was the junctional nævi which were liable to undergo malignant change and these were the ones most commonly found on many of the areas liable to trauma, such as the sole of the foot. Perhaps therefore the so-called vulnerable areas were vulnerable because junctional nævi were so commonly found there.

Professor STEWART referred to an instance in which the malignant cells had evidently been kept in subjection for a long time. A large necrotic mass had been found in the sacrum, but at necropsy metastatic melanocarcinoma was found in the liver. It transpired that an eye had been removed some years earlier on account of a malignant melanoma: the pelvic mass was deemed to be a greatly delayed secondary, while the liver deposits were assumed to be tertiaries.

Malignant Hypertension

G. J. CUNNINGHAM (St. Bartholomew's Hospital) described two cases of malignant hypertension with kidneys which were partly smooth and partly granular. The first was a 60-year-old woman with mild hypertension whose illness suddenly became more acute and serious 3 years later. She presented on this second occasion with dyspnœa, vomiting, and both mental and visual disturbances. The blood-pressure was 260/150 mm. Hg and the blood-urea 352 mg. per 100 ml. Death soon followed. The second patient was a man, aged 36, who had intermittent claudication. 5 years later he suffered from paroxysmal dyspnœa with a blood-pressure of 270/130 mm. Hg. He died soon afterwards in coma. Each case was found to have aberrant renal arteries, one of which had become obstructed by a thrombus. It was a matter of interest that the parts of the kidneys supplied by the thrombosed vessels showed mild hypertensive arteriosclerosis—the smooth areas—while the remainder of the kidneys supplied by the patent vessels were grossly diseased, containing numerous areas of fibrinoid degeneration in both glomeruli and arterioles. The aberrant vessels were normal in appearance, but the thrombosed vessels revealed underlying atheroma of a degree deemed sufficient to produce a measure of obstruction and to prevent the development of severe lesions in those parts of the organ. Because of the resemblance of the kidneys to those produced experimentally by Byrom and Wilson in rats, Dr. Cunningham referred to his cases as "a naturally occurring experiment."

Colitis Cystica Profunda

H. B. GOODALL (Dundee) described two examples of colitis cystica profunda. The first patient had suffered from macrocytic anæmia and mucous diarrhœa followed by pelvirectal obstruction, the second from chronic ulcerative colitis with severe bleeding. In neither case were pathogenic organisms found. The peculiar breaches in the muscularis mucosæ, secondary to abscess formation, were believed to be of significance and the probable cause of the ingrowing mucus-secreting epithelium and the consequent formation of cysts.

Epiloia

L. CROME (Fountain Hospital) dealt with the structural features of epiloia, and indicated their relative frequency. Incomplete forms of the disease should be sought particularly among the relatives of patients with the fully established disease. Dr. Crome described in his series two instances of fibroelastosis of the heart and referred to two other reported examples.

Malignant Disease of Bone

Professor PULVERTAFT and J. G. HUMBLE (Westminster Hospital) demonstrated a film prepared by phase-contrast microscopy which included examples of myelomatosis and other malignant conditions of bone.

Epidemic Hæmorrhagic Fever

Colonel HUGH R. GILMORE (Washington) described the clinical and pathological features of epidemic hæmorrhagic fever, sometimes called Korean fever. Although fighting began in Korea in June, 1950, it was not till the summer of 1951 that the disease was recognised in United Nations troops, and it reappeared in 1952. It has affected only troops in the region of the 38th parallel and in rural areas: it has not been noted in Southern Korea. Cases have first appeared in May with the advent of the light spring rains and have reached a peak in June. The incidence curve then falls after the summer rains and rises to a second and higher peak with the dry season in October. The incidence of the disease in a military unit is not heavy, for only a few individuals in a company may be affected and they may all be in the same squad. There has been no evidence of spread from person to person or through water or food, but it has been noted that soldiers may contract the disease after being confined for a while to certain areas, suggesting therefore an insect vector. United States workers consider a trombiculid mite (chigger) to be the responsible vector, and these are known to be distributed in highly localised foci at a time when the disease occurs and to have a limited range of movement. Japanese and Russian workers, however, earlier believed that the disease was conveyed by *Laelaps jettmari*, a mite found on the common field-mouse. Although there would appear to be more support for the former view the disease has not so far been transmitted to animals, and both the causative agent and its means of transmission remain unproven. Second attacks have not occurred.

The onset is acute with a febrile stage accompanied by headache, back pain, and anorexia. Nausea and vomiting are common after the first 24–48 hours. The patient may complain of photophobia, blurring of the vision, and orbital pains, while a scarlatiniform rash of the face and neck earlier on in the disease is typical, together with infection of the conjunctivæ and pharynx. Albuminuria appears about the 3rd or 4th day, together with casts and often erythrocytes. One should hesitate to make the diagnosis in the absence of albuminuria. After 3–5 days the fever subsides and convalescence begins. In the more serious cases, however, petechial hæmorrhages appear about the 4th day on the palate and shortly afterwards along the axillary folds and the lateral chest wall and neck. Blood may appear in the urine, stool, or vomitus. Subconjunctival bleeding was common in the outbreak of 1951, but less frequent in 1952. During the hæmorrhagic phase there may be repeated episodes of shock during which the patient may die. The shock is accompanied by oliguria, azotæmia, and persistent vomiting, but if recovery occurs a period of diuresis follows. The mortality-rate was 8% in 1951 and about 5% in 1952.

Leucopenia is usual in the early stage, but later there is leucocytosis with an increase of immature granulocytes. About 90% of patients show an increased capillary fragility by the Rumpel-Leede test, while moderate thrombocytopenia occurs in about 75% of the patients. The shock, which appears to be responsible for about two-thirds of the deaths, is presumed to be due to loss of serum through damaged capillaries. Deaths in the later phases are associated with dehydration, fluid and electrolyte imbalances, and renal failure. Necropsy findings include hæmorrhages in the kidneys, right auricle, anterior pituitary, and occasionally the adrenal. Focal hæmorrhages have been seen in the meninges and brain. Focal myocarditis and mild diffuse interstitial pancreatitis have been observed in some cases, while there may be necrosis of the anterior lobe of the pituitary extending into the infundibulum, of the pyramids of the kidney, of the adrenals, and occasionally of the islands of Langerhans. The lesions suggest the presence of an agent which causes capillary damage and, either directly or on account of tissue anoxia, cellular necrosis. There is no swelling of the capillary endothelium as in typhus. No treatment has been found to be of avail other than absolute rest. Evacuation by helicopter rather than by ambulance is believed to have saved lives. Mite-repellants are now freely and successfully used in the affected areas.

Intestinal Spirochætosis

A. G. SHERA (Eastbourne) described instances of intestinal spirochætosis associated with persistent relapsing diarrhœa.

Staphylococcal Coagulase

E. S. DUTHIE (Southampton) spoke on the mode of action of staphylococcal coagulase, which is of two sorts—the bound and the free. The former acts directly on the fibrinogen of certain animals and is the one concerned in the slide test commonly employed; the latter, which is responsible for the reaction in the tube test, is liberated in the culture-medium and clots any fibrinogen provided that an activator is present. Bound coagulase is liberated in autolysis, and its presence can be shown by an antibody-inhibition test. Reference was made to the value of these separate forms of coagulase in the preparation of vaccines.

Laboratory Investigation of Poliomyelitis

G. L. LE BOUVIER (Colindale) described recent developments in the laboratory investigation of poliomyelitis, mentioning in particular the value of tissue culture in the identification of the strains of the virus. Type 1 was first identified in this country in London in June, 1946, type 2 in Stowmarket in August, 1951, and type 3 in Cardiff in December, 1951. All three types occur from time to time. The complement-fixation test is held to be of little worth in the diagnosis of the disease, but it is of value in epidemiological studies.

Hæmophilia and Christmas Disease

J. R. O'BRIEN (Plymouth) discussed the differential diagnosis of hæmophilia and Christmas disease, for several families credited with having had the former are now known to have had the latter. Patients with Christmas disease have a long, although sometimes a normal, clotting-time, an abnormal prothrombin consumption, and a delay in thrombin generation. In the laboratory the defect can be made good by normal plasma. The thromboplastin-generation test is used to decide whether the fault lies with the serum factors amongst which is the Christmas factor or the albuminia-treated plasma fraction containing the antihæmophilic globulin. Blood used in transfusing these patients must therefore contain the Christmas factor, the anti-hæmophilic factor being unnecessary. In a patient studied over a period of 5 months it was noted that the clotting and prothrombin-consumption times were readily restored to normal with blood and plasma transfusion, but that 4 pints was usually needed to restore temporarily the thromboplastin-generation test to normal and bring about a cessation of the bleeding.

Erythræmic Myelosis

G. DISCOMBE and K. H. NICKOL (Central Middlesex Hospital) described a case of erythroleukæmia in which the prolongation of life by means of transfusion had made it possible to study the pathological process at a later stage of the disease. The patient, a man aged 72, eventually developed an acute granulocytic leukæmia and died of cerebral hæmorrhage. These workers suggest that as nothing is known as to their pathogenesis the so-called erythræmic myelosis or Di Guglielmo's disease and acute leukæmia with erythroblastic onset should be grouped together.

Sickle-cell Trait

H. LEHMANN (St. Bartholomew's Hospital) dealt with the distribution of the sickle-cell trait. In negroid Africa the highest incidences are found in the north and east, falling somewhat towards the west and diminishing towards the south, so that in South Africa it is virtually absent. In Uganda it is about 20% in the Nilotic-speaking tribes but almost nil in those speaking a language related to Hamitic. In the Bantus the incidence of the trait varies in inverse proportion to the degree to which they were in contact with the recent Hamitic invaders. Thus it might seem that the trait came from Asia. In Europe some sickle-cell-trait carriers are found in Italy, and a few isolated pockets with high incidence exist in Greece. Wherever the sickle-cell trait is frequent there is malaria, a low social status, and close inbreeding.

Diagnosis of Myelomatosis

J. G. HUMBLE and N. F. MACLAGAN (Westminster Hospital) discussed sternal-marrow findings and flocculation tests in the diagnosis of myelomatosis.

Iron-containing Granules in Erythrocytes

A. S. DOUGLAS and J. V. DACIE (Postgraduate Medical School of London) described the incidence and significance of iron-containing granules in human erythrocytes. These were found to be present in reticulocytes but rarely in adult erythrocytes except following splenectomy. They believed that the spleen might be responsible for the assimilation of iron in the synthesis of the hæm molecule.

Tests in Burned Patients

S. SEVITT (Birmingham) had made use of corticotrophin (A.C.T.H.) or adrenaline to determine whether acute adrenocortical failure in burned patients was still present after the eosinophils had returned to normal. Of 14 patients tested with corticotrophin 12 gave normal eosinophil-depression curves indicating normal stimulable reserves of the adrenal cortex. The remaining 2 failed to produce eosinopenia. The 1st ultimately died; but a few days after the test spontaneous eosinopenia developed, indicating that if failure had occurred earlier it was of short duration. The 2nd patient continued to produce abnormal curves until the 16th day, when the test became normal. In 9 of the 12 patients tested with adrenaline normal curves were found. Abnormal results were found in 2 children who had become confused and irrational. Since adrenaline produces eosinopenia indirectly, probably via the hypothalamus, its lack of eosinophilic effect in a patient reacting normally to corticotrophin is probably due to pituitary or hypothalamic disturbance.

Test for Tuberculous Meningitis

The value of a test for early tuberculous meningitis based on the passage of bromide from the blood to the cerebrospinal fluid was reported by HONOR SMITH and G. HUNTER (Oxford). The transference of this substance appears to be greatly facilitated in tuberculous meningitis when compared with comparable forms of meningeal inflammation.

Demonstrations and Address

The next session was devoted to demonstrations and to Dr. R. G. MACFARLANE'S film on sternal puncture. Thereafter Prof. DOROTHY RUSSELL delivered a presidential address (printed on p. 771).

Tests of Pituitary Function

J. HARKNESS and C. DONOVAN (Portsmouth) had confirmed the findings of Stewart, Horn, and Robson (1953) in which it was shown that corticotrophin causes an increase in the plasma total ascorbic acid together with an increased proportion of "reduced ascorbic acid," whereas cortisone causes no change in the total level although there is an increase of "reduced ascorbic acid." They now described a test of pituitary function based on the ascorbic acid levels after an injection of corticotrophin. The degree of response in some psychotics was found to be lower than in normal controls. Changes similar to those produced by corticotrophin were noted after electroconvulsive therapy, emotional stress, oral sodium salicylate, or phenyl-butazone.

Steroids and Water Metabolism

M. LAMOTTE and L. JUSTIN-BESANÇON (Paris), whose paper was presented by J. J. BERNIER, referred to the influence of steroids on water metabolism. Œstradiol was effective in increasing the total water-content of the body, but glomerular filtration remained practically unaltered although the calculated renal plasma-flow was slightly lessened. Diuresis provoked by water consumption was not modified, but when brought on by saline it was considerably lessened. Sodium chloride was not eliminated, the arrest of the sodium being the reason for this. Testosterone, on the other hand, induced an increase of weight without any increase of either total or extracellular water; in other words the increase of weight was due to an increase in body-tissue. The renal plasma-flow however, was increased as was also the diuresis induced by water or saline. The elimination of sodium was only impaired if the kidneys had been previously damaged. Cortisone caused a marked retention of water and sodium, yet increased both glomerular filtration and the renal plasma-flow. Notwithstanding this, diuresis induced by the ingestion of water was increased. In these studies the total water-content was estimated by the antipyrin method, and the extracellular water by the mannitol technique.

Postoperative Retention of Salt and Water

A. A. G. LEWIS and L. P. LE QUESNE (Middlesex Hospital) dealt with the problem of the postoperative retention of salt and water. For 24–48 hours after operation (the observations were made on gastrectomy patients) there is a diminished excretion of water, the result of release of antidiuretic hormone. This is due to the emotional disturbance associated with the operation and is probably accentuated by morphine and anæsthesia. Sodium retention occurs in two phases, often separated by an increased sodium excretion: the first, on the day of operation, is probably mainly due to hæmodynamic factors; the second, usually beginning on the 3rd day, can be considerably reduced by ensuring a reasonable potassium intake throughout. In some cases, particularly when no potassium was given, continuous postoperative sodium and water retention could be observed. In the discussion which followed reference was made to the value of weighing patients for the rapid assessment of sodium and water retention.

Fallacies of the Test-meal

F. AVERY JONES (Central Middlesex Hospital) referred to the fallacies of the test-meal. The shaded area on many test-meal charts corresponds to the findings in 80% of Bennett and Ryle's series of healthy subjects. The remaining 20%, although they show less or more acid than the majority, are nevertheless in perfect health. A high or low reading therefore should not be taken to imply an irregularity of gastric function. Follow-up studies on patients with high readings have not shown any correlation with dyspepsia, unless there was an increased volume of secretion. A high acid curve may be due to rapid emptying or to hypersecretion. Achlorhydria in clinical practice implies a gastric juice with pH greater than 3·5, but at this level there is still a little acid present. Patients with histamine-fast achlorhydria may be studied further by 24-hour pH curves; those with primary anæmias give a pH of 4·5 or higher, whereas those with ulcer dyspepsia have free acid for many hours throughout the day. The main indication for a test-meal is in those patients with vague symptoms referable to the upper abdomen in whom radiological reports have been negative. In such cases the test might be helpful in revealing the presence of carcinoma by gross bloodstaining and an increased difference between the free and total acidity. Acid is found in at least a third of patients with carcinoma of the stomach. Dr. Avery Jones always found it valuable to know if the blood reported as present was in fact gross bloodstaining or merely positive for blood with chemical tests. He believed that very little was to be gained from the routine use of test-meals in cases of peptic ulcer.

In the discussion which followed he said that he preferred the gruel test-meal to the alcohol meal because the former produced a more physiological form of distension of the viscus. A nasal tube was easier for the patient and was certainly to be preferred when a 24-hour test was indicated. The tubeless test-meal was probably adequate for the investigation of cases of pernicious anæmia. He agreed that the management of the patient during the test should be in the hands of an experienced and competent sister familiar with all the pitfalls in the technique, and that failure to observe this precaution was liable to produce unsatisfactory and misleading results.

Tests of Glomerular-filtration Rate

J. E. CRAIK and A. P. KENNY (Glasgow) reported on a series of 63 patients in whom the thiosulphate and inulin clearance tests had been compared. The estimation of plasma-thiosulphate was found to be unsatisfactory; and moreover it appeared that thiosulphate was actively excreted by the tubules, the excretion becoming maximal at plasma-thiosulphate concentrations of 16 mg. per 100 ml. The estimation of thiosulphate clearance was inadequate as a measure of glomerular-filtration rate. These workers adduced evidence that in myxœdema tubular reabsorption of thiosulphate is inhibited.

Estimation of Serum-cholinesterase

B. W. MEADE (Westminster Hospital) reported that the colorimetric determination of serum-cholinesterase was satisfactory for routine use, but that the test had proved of little value in the diagnosis of thyrotoxicosis.

Liver-function Tests in Rheumatoid Arthritis

P. W. DARBY (Westminster Hospital) described his findings in 50 cases of rheumatoid arthritis in which a battery of liver-function tests had been carried out. While positive flocculation tests which he obtained represented changes in the serum-proteins which might or might not be due to liver disease, the results with Mateer's bromsulphthalein test and the estimation of urine-coproporphyrin as recommended by Schwartz showed that in rheumatoid arthritis a degree of liver damage exists which is significantly greater than that with chronic ill health from other causes.

Reviews of Books

Disposal of the Dead

C. J. POLSON, M.D. Birm., F.R.C.P., professor of forensic medicine; R. P. BRITTAIN, M.A., B.SC., M.B., LL.B. Glasg., senior lecturer in forensic medicine; T. K. MARSHALL, M.B. Leeds, lecturer in forensic medicine, University of Leeds. London: English Universities Press. 1953. Pp. 300. 21*s*.

To collect in one volume the more important material concerning the disposal of the dead was a good idea, and this book, after a historical introduction, deals with mediate disposal (including death certification and registration), cremation, burial (including funeral rites), exhumation, embalming, and funeral direction. Admittedly, if the object were an exact and comprehensive exposition of the law and practice, many of these subjects would require a textbook to themselves; and, though the book is full of useful and curious information, it suffers in places from lack of detail.

Thus the 4 pages on anatomical dissection would be the better for expansion. The distinction is not clearly drawn between the main sources of supply to schools of anatomy —i.e., the unclaimed bodies of persons dying in welfare institutions, and bodies made available by voluntary bequests. There is also confusion between the Anatomy Act, which is "an Act for Regulating Schools of Anatomy," and the practice of post-mortem examinations. In references to sections of the Anatomy Act, the number of the 1940 Order extending the period before interment is misquoted, and a similar Order for Scotland, which preceded that for England and Wales by twenty-four years, is not mentioned. Beyond a reference to the forms required at Leeds, little is said which would help funeral directors to deal with the actual procedure in cases where a voluntary bequest has been made for anatomical dissection. The chapters on cremation and embalming are excellent, but that on international transport of the dead refers neither to the sailor's dislike of carrying bodies on a ship, nor to the International Agreement concerning the Transport of Bodies, signed in Berlin in 1937 —though this has only been ratified by some dozen countries.

For such reasons it would perhaps be well to make the next edition rather larger. But in its present form it fills the greater part of a considerable gap. The medical reader will find much to inform him; and so, of course, will the funeral director, for whom the book is primarily intended.

The Surgery of Infancy and Childhood

Its principles and techniques. ROBERT E. GROSS, M.D., D.SC., William E. Ladd professor of children's surgery, Harvard Medical School. Philadelphia and London: W. B. Saunders. 1953. Pp. 1000. 80*s*.

THIS is the record of Professor Gross's long experience. The subject covered is pædiatric surgery—after the orthopædic surgeons have claimed the fractures and deformities, the plastic surgeons the cleft lips and palates, the nose and throat surgeons the glands of the neck and the disorders of the nose and throat, and the neurosurgeons the ills of their chosen domain. Professor Gross is fortunate in retaining the chest and urological surgery, which in this country would also probably go elsewhere. However, there is more of the child left than one might suppose, and in each of the 61 chapters of this book there is a working plan for the diagnosis, treatment, operation, and aftercare of a disability. The author has himself tried and proved the steps recommended, and the young surgeon who has had little experience of children's surgery could follow the instructions and never go far wrong. It is a book which could never be written by a young man: not a word is based on hearsay or theorising.

Certain differences in approach and technique from ours are inevitable. Few anæsthetists in large centres in England, for instance, would nowadays agree that the open-mask drop method is the anæsthesia of choice for these cases, though they would have done so ten years ago. Drainage is advocated for appendicitis with peritonitis more often than would be the case here. Infants with hypertrophic pyloric stenosis are given 10% glucose intravenously, 10 ml. per lb. per day, and subcutaneous saline 15 ml. per lb. per day. The 10% glucose is hypertonic and makes adults very thirsty; and the amount of subcutaneous saline administered is equivalent to giving a $10^1/_2$ st. man 2250 ml. of fluid subcutaneously every twenty-four hours—an experience from which even the stout-hearted would shrink.

Discussing duodenal atresia, Professor Gross says that careful assessment of the child's mental state must be made, since many children with duodenal atresia are mongols—the implication being, apparently, that those thought to be mongols should be allowed to die. This seems dangerous reasoning. But if his book sometimes evokes opposite opinions, it is nevertheless one which deserves to find an honoured place in all pædiatric centres.

Stress and Disease

HAROLD G. WOLFF, M.D., professor of medicine (neurology), Cornell University. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1953. Pp. 199. 40*s*.

THIS monograph in the American Lectures in Physiology series brings together in a small volume much original work which Professor Wolff and his colleagues have already published. It offers a concise review of some of man's reactions to danger and his adaptive responses, which Dr. Wolff has done so much to study by controlled experiment. Many of his results are well known, for he is a pioneer of the scientific investigation of the effects of emotion on the human body. To some the concepts expounded may seem too wide and too comprehensive, the arguments uncritical; to others the evidence will be convincing. But none can fail to be fascinated by the skill and brilliance of the writing. Broad principles are related to particular examples of demonstrable changes in the subject. These are not based on animal studies, but on the results of varied stimuli to the skin, the stomach, the colon, the heart, or other organs of the human being. Many of the conclusions seem common-sense comments on accepted observations, but it is rare to find them so clearly expounded. Man's reaction to man may be at least as important as his reaction to a microbe, and the threat of a danger may call forth responses little different from the assault itself. Professor Wolff produces evidence that man must pay some price for the way in which he lives—and that some of the price of adaptation and reaction may be pain and disease. In the contented and well-adjusted subject the response to an emotion or a stress may be transient and harmless; but under conditions of anxiety or resentment, caused by a threat, a drug, or the mere effort of coping with day-to-day burdens, this same person may react quite differently. It is, therefore, in fostering the adaptive-protective response, and in changing the way in which a particular subject perceives a stress, that the physician may be able to do most good; and Dr. Wolff believes that of his 739 subjects, two out of three were constructively altered during a three-year period of study. The main therapeutic aim was to produce tranquillity and freedom from sustained hostility and resentment.

Founders of Neurology

Editor: WEBB HAYMAKER, M.D., chief, neuropathology section, Armed Forces Institute of Pathology, Washington, D.C., with the biographical and editorial assistance of KARL A. BAER. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1953. Pp. 479. 75*s*. 6*d*.

IF the purpose of biography is to inspire by example, Dr. Webb Haymaker and his associates may well be content with this interesting illustrated collection of character studies, prepared for the Fourth International Congress of Neurology. To provide, in a single volume, succinct accounts of 133 of the masters of neurology, written by their admirers and in some instances their pupils, is an achievement of note.

It is salutary to be reminded of the prodigious output of work of Ramon y Cajal, of J. E. Purkinje (who had to wait

years for his long-wanted microscope), and of the versatile Heinrich Obersteiner. We read of the stoicism of the youthful Nicholas Achucarro, a victim of Hodgkin's disease; and of Alfons Maria Jakob, a tremendous worker, who suffered for his last 7 years from osteomyelitis and died at the age of 47; and of the perseverance of August Forel, who, when most men would have surrendered to fate, learned after a stroke to write left-handed, and continued at work for another 19 years. Dr. von Bonin portrays well the polite and genial Rudolph Albert von Kölliker, who retired from his chair at Würzburg at the age of 85 after publishing twenty papers in his last 8 years in office. Tribute is paid, too, to the memory of Alfred Walter Campbell, who, fired by the encouragement of Sherrington, did his important pioneer work on cerebral topography in the lonely laboratory of Rainhill Asylum.

Success has come to neurologists for different reasons. Charcot and others lived in the heroic age of neurology; and he made full use of the unparalleled facilities of the Salpêtrière at a time when the paralysed were in need of medical classification. The important contribution of George Sumner Huntington was made in general practice. The success of Alois Alzheimer, who died at the age of 51, lay in the fact that he combined the clinical and pathological approach to brain disease. Dr. A. T. Rasmussen describes the indefatigable Franz Nissl as "a gnome of a man," a genius and a practical joker; and the portrait of the versatile Silas Weir Mitchell, influenced throughout life by Claude Bernard and also by his vivid memories of the battle of Gettysburg, is ably drawn by Dr. Haymaker.

Considering that these biographies conform to a single pattern, they are remarkably good: emphasis has rightly been laid throughout on an accurate study of the man's character rather than on the bald facts of his *curriculum vitæ*. Some of the essays are too short to do full justice to their subjects; but the editor, by weaving into the text a running history of neurology, has done what he set out to do in a most engrossing manner.

Les psychoses passionelles

J. BOREL, Médecin-Chef des Hôpitaux Psychiatriques. Paris: Expansion Scientifique Française. 1952. Pp. 472. Fr. 2000.

To appreciate this book fully one needs to be well acquainted with classical French psychiatry, and with classical French literature. Dr. Borel draws his quotations from La Bruyère or Molière almost as often as from Lasègue, Magnan, or Esquirol. The writers, however, to whom he turns oftenest are Ribot and de Clérambault—Ribot who published his *Essai sur les Passions* in 1906, and Clérambault, the brilliant and erratic clinician who saw in the mechanism of passion a generative force giving rise to diverse psychoses, *les délires passionels*. He writes in clear and sometimes eloquent language of the physical and psychological characteristics of passion and of its pathological forms, which he discerns in hypochondria and in mystical love as well as in jealousy, revenge, and erotomania. His clinical analyses are careful studies of morbid feeling; they owe nothing to psycho-analysis, as he points out, and have more in common with Balzac than with Lagache. Even those who dissent strongly from his method and views will enjoy his lucid exposition and lively critique.

Chemical Physiology of Contraction in Body and Heart Muscle

A. SZENT-GYÖRGYI, PH.D., Institute for Muscle Research, Marine Biological Laboratory, Woods Hole, Mass. New York: Academic Press. 1953. Pp. 135. $4.80.

THIS book is divided into sections: (1) introductory notes on the histology and physiology of muscle; (2) the molecular mechanism of motion in voluntary muscle; (3) a study of heart muscle; and (4) some general views about the factors essential to muscle activity. Dr. Szent-Györgyi, whose outstanding record in biochemical discovery and thought is well known in this country, here states and amplifies many of the almost revolutionary views on muscular contraction which caused so much discussion when he put them forward in his earlier book, *The Chemistry of Muscular Contraction*.

This new book, he says, "is not offered as a comprehensive and objective review; it is the presentation of a problem" as he sees it after fourteen years' experiments with muscle. He has "endeavoured to talk in a language understandable to the average biologist, stressing outlines more than details, and hoping to be excused by those who prefer a more technical treatment." In these aims he is entirely successful, for he has written a stimulating and controversial little book easily to be understood by anyone even slightly acquainted with muscle physiology and biochemistry. His rather quaint English is here a great advantage, for he eschews pompous and complicated sentences and produces an effect of clarity and charm.

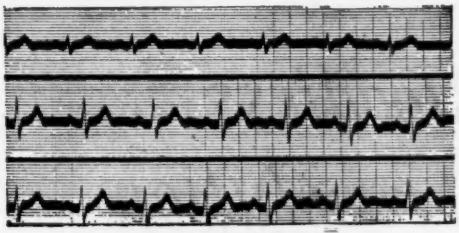
The reader will find here the experimental evidence for the conception of actomyosin (the contractile protein element) made up of actin and myosin, of the "meromyosins" of which the latter is composed, and of the part perhaps played by adenosine triphosphate (A.T.P.) in the contraction process. Here is a fascinating story about the recent work of his school on heart muscle, and exciting hypotheses about the way in which the nervous impulse may act. For all who value inspired speculation and who wish to keep abreast of present-day developments in muscle biochemistry, physiology, and pathology, this book is indispensable.

Thinking

An Introduction to its Experimental Psychology. GEORGE HUMPHREY, professor of psychology in the University of Oxford. London: Methuen. 1951. Pp. 331. 21*s*.

Professor Humphrey, who in 1933 provided us with a thoughtful book on learning, has now written a learned book on thinking. This scholarly work covers a wide and fundamental field of psychology, in which it is easy to miss the wood for the trees: but Professor Humphrey's masterly grasp keeps the material in such proportion that the reader has the main problem always before him. The first chapter deals with association, and argues that the conditioned reflex theory is the modern form of the classical theory of association, against which much subsequent experimental work was "an unsuccessful revolt." This is illustrated by the monumental studies of the Würzburg school, to which the next three chapters are devoted. The *Gestalt* theory, and the connection between thought and motor reaction, are next examined. A particularly valuable chapter is devoted to language and thought; a fuller treatment of aphasia would here have been welcome, but throughout the book the author has deliberately abstained from examining pathological thinking, except incidentally and briefly. The reader concerned with anomalies such as schizophrenic thinking will therefore find no direct reference to them, but a rich supply of theoretical and experimental data many of which throw light on his problems.

Carbohydrate Metabolism (2nd ed. Chicago: University Press. London: Cambridge University Press. 1952. Pp. 336. 64*s*.).—This revised and slightly enlarged edition of the well-known work by Dr. Samuel Soskin and Dr. Rachmiel Levine will be as well received as its predecessor. The authors describe it as a correlative text which brings together biochemical, physiological, and medical knowledge of carbohydrate metabolism in a unique way. The claim is substantiated; yet the work remains personal in its presentation, stressing, as it does, the authors' particular viewpoints. Thus great prominence is given to the rôle of the liver in the control of the blood-sugar. Besides containing an additional 230 selected references, this edition includes new material on the interconvertibility of foodstuffs, isotope studies, and hormones—in particular, insulin and the adrenal steroids. As in the first edition there is a good critical account of the significance of respiratory quotients and dextrose: nitrogen ratios and an excellent review of the mechanisms concerned in ketosis. The possible rôle of pancreatic hyperglycæmic factor in the apparent action of insulin on liver glycogen has been disregarded, and the discussion of insulin resistance in infections omits any reference to the adrenal cortex. These, however, are small criticisms of a work which will be widely used and appreciated.



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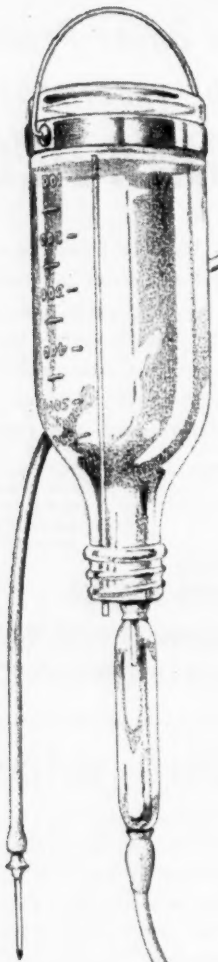

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THE LANCET

LONDON: SATURDAY, OCT. 10, 1953

Our Natural Element

LAST year over 4000 people in Greater London lost their lives in a major disaster. This was the fog which descended on the capital on Dec. 5 and did not lift until Dec. 9. No other recorded fog has achieved anything like this death-rate: the "smog" in the Meuse Valley in 1930 was responsible for only 64 deaths, and that in Donora, Pennsylvania, in 1948, for 20. The increased mortality from the London fog was spread over the two succeeding weeks, and was particularly high among those aged 45 and over, though young children too were seriously affected. The National Smoke Abatement Society are as anxious as the rest of us that such disasters should not recur; and they opened their twentieth annual conference, held at Glasgow, from Sept. 30 to Oct. 2, by discussing how to prevent them.

We manufacture our own fogs—wrapping our cities (in JOHN EVELYN's classic phrase) in a "hellish and dismall cloud of seacoale"; but the weather has to collaborate. Under ordinary conditions, as Mr. A. PARKER, D.SC., explained, the upper air is cooler than the air near the earth's surface, and as the warm air rises there is a constant circulation, which produces a breeze or wind. Occasionally, however, the temperature at ground level falls below that of the layers above, which means that no air rises, there is no wind, and, if the air is humid, fine drops of moisture condense in the lower stagnant levels, causing a mist or fog. In densely populous and industrial areas sulphur-dioxide gas and other products of fuel combustion, which are normally dispersed and diluted by the wind, collect in the stagnant layers in increasing concentration and give the fog that objectionable flavour and irritating quality so characteristic of the "London particular."

December last year opened with frost and local fogs, followed by milder weather on Dec. 3; then, on Dec. 4, a large anticyclone reached us, and stayed until Dec. 8, causing frost and fog. Milder weather did not reach London till Dec. 9. The depth of the fog was variable, being 500 ft. above sea level at Ranmore Common, Surrey, though Hayes Common, Kent, which has an altitude of only 250 ft., was almost clear for the whole period; while at Blackheath, at an altitude of only 160 ft., the tops of the buses were above the fog for part of the time. There was hardly any wind, and maximum temperatures ranged from 32° to 43°F. The concentrations of smoke and sulphur dioxide in the air of the Thames Valley between Westminster and Beckton, from Dec. 2–4, were about the same as the averages for December, 1951 (when there was no intense fog): that is to say about 25–71 mg. of smoke per 100 c.m., and 10–21 parts of sulphur dioxide per 100 million parts by volume. From Dec. 5–8, however, the comparable figures for smoke were 103–375 mg. and for sulphur dioxide 47–107 parts—about five times as much as usual, in fact. There are no measurements for carbon monoxide over the period, but wherever there was dense and slow-moving traffic it probably became high, anyhow at the level of car exhausts.

There were fogs in other parts of the country—notably at Glasgow, Leeds, and Salford; but none of them attained the level of air pollution of the London fog, or lasted so long.

Dr. J. A. SCOTT, medical officer of health for the County of London, recalled the results of a study, made earlier this year by Dr. W. P. D. LOGAN,[1] which showed that in the two weeks following the fog deaths from bronchitis were 10 times as many, from influenza 7 times, from pneumonia 5 times, from pulmonary tuberculosis $4^1/_2$ times, and from other respiratory infections nearly 6 times as many, as the average for the three weeks preceding the fog. Other patients dying earlier than they would otherwise have done had disorders of the heart and circulation, or cancer of the lung; and an undue number of infants died from gastroenteritis, presumably secondary to a respiratory infection. Recent research has shown, he said, that sulphur dioxide and trioxide in concentrations in the air which are ordinarily non-toxic, can, when they are carried to the lungs in an aerosol, become exceedingly toxic and kill an animal in 4 seconds. This information had reached him from Dr. MARY AMDUR, who, with Prof. PHILIP DRINKER and Mr. W. W. MELVIN, PH.D., reports in our present issue some other effects of inhalation of sulphur dioxide by man. While inhaling this gas, all their subjects breathed more rapidly and less deeply, and their pulse-rates rose; and one of them was so seriously inconvenienced that the experiment had to be stopped. This study also shows that people who work constantly in atmospheres containing appreciable amounts of sulphur dioxide become more tolerant of it: but this immunity may be achieved at the cost of a chronic inflammation of the upper air-passages, and we have no idea what its long-term effects may be.

The risks to which fogs expose us all can be avoided in only one way—by producing less smoke. Various measures directed to this end are now coming into action, and the society have had a considerable part in promoting them: "smokeless zones," for instance, were the inspiration of Mr. CHARLES GANDY, a former chairman. Dr. T. MORRISON CLAYTON, medical officer of health for Coventry, told the conference that at least fifteen local authorities have already obtained the necessary powers in private Acts to establish their own smokeless zones, and others have the matter under consideration. The common council of the City of London have recently announced their intention of seeking statutory powers to establish a smokeless zone within the City.[2] They intend to prohibit the installation of furnaces in buildings unless these are, as far as possible, capable of being operated continuously without emitting smoke. But any impressive reduction of pollution, Dr. CLAYTON pointed out, must depend on the extension of smokeless zones to large areas, which must be enlarged still further over a period of years. Manchester has made a beginning, by proposing to extend its original smokeless zone to twice its present size, and Coventry intends to do more than double its zone, which was first established in March, 1951. But many authorities, especially those not faced with excessive local smoke problems, are taking no action, regardless of the fact that smoke knows no boundaries, and that in these days of dispersal of industry, factories may hatch out at any moment in their midst.

1. *Lancet*, 1953, i. 336.
2. *Times*, Sept. 25.

In any case industry is not the only, or even the worst, culprit. The domestic hearth, renowned though it may be for nourishing all the solid virtues, is itself no mean consumer of solid fuel: one may almost say there is no domestic fire without smoke. Indeed family hearths contribute some 900,000 tons—about half the total—of our annual smoke output. Those who think of smokeless zones as applying mainly to industry must accept the awkward truth that if we are to abolish dangerous fogs, domestic fires must also be taken into account. This clearly places a duty on the householder; but it is hard for him to discover exactly what that duty is. Speakers at the conference offered two suggestions: first that he should burn only smokeless fuel, and secondly that he should fit his home with modern improved grates which burn fuel more completely than the older types. In addition he is urged to use gas or electricity instead of coal fires whenever the weather permits. But at once he encounters difficulties. The new grates are relatively expensive—to buy, or to fit, or both—and so are gas and electric fires. True, smokeless fuel can be burnt in even an old-fashioned grate without adding appreciably to atmospheric pollution; but then the supply of smokeless fuel is not adequate to supply every household; and moreover it is somewhat more costly than raw coal.

This is surely a very silly dilemma. We are in the plight of fish whose stream is poisoned by the effluent of a factory: our native element is being made noxious to us, and already some of us have lost our lives. Were we indeed fish, stringent regulations would at once come into force to prevent the nuisance. It is an odd reflection that air pollution (with which past lawgivers made several tinkering attempts to deal) has probably grown steadily heavier through the centuries, so that in this respect we have sunk, generation by generation, into slum conditions. Our dirty cities would have shocked our forebears as much as their drains shock us.

It is surely time to help the National Smoke Abatement Society to clean the place up. According to Commander C. BUIST, Mr. J. O. COOKE, Mr. ERIC J. DAVID, and Mr. H. H. PROSSER, in their joint paper on the availability and distribution of smokeless fuel, we should concentrate first on the areas of heaviest pollution—Greater London, the Black Country, south Lancashire, the West Riding, the Clyde, the Tyne, and the Tees. To eliminate domestic smoke in these areas, they say, something less than an additional 10 million tons of solid smokeless fuels would be necessary; and it would be within the competence of the smokeless fuel industries to produce that, say, on a ten years' plan. With support from the Government and local authorities, however, it would be possible to achieve this target in only four years, and to increase the tonnage to 15 million by 1962. Secondly, designs of appliances suitable for burning solid smokeless fuel should be available at reasonable prices; and the makers of such appliances and distributors of smokeless fuel should provide an efficient service to advise the householder on the correct installation and maintenance of his appliance, and the kind of smokeless fuel to use in it.

Householders have taken kindly to many of the new types of stoves and grates suitable for burning smokeless fuel: some $2^1/_2$ million of them were bought in 1952, so the task of persuading everybody to instal them is probably not as serious as some imagine. Local authorities, it was also suggested, might pay compensation (as Salford has undertaken to do, up to £2 per house) towards the cost of providing more modern equipment in houses included in a smokeless zone; they can see, moreover, that efficient grates are provided in their own new estates. Prof. F. E. TYLECOTE, in his presidential address, urged on local authorities their duty of propaganda—by instituting more regional committees, forming women's associations, enlarging smokeless zones and creating new ones, forming more "stokers' schools," arranging exhibitions, meetings, and broadcasts, and urging their fellow authorities to join in smoke abatement schemes. Sir JOHN CHARLES, who delivered the fourth Des Voeux memorial lecture at the conference, emphasised the great need for research. He spoke of Professor DRINKER'S plan to reproduce smog in a disused railway tunnel, and to examine its effects on human volunteers. The deliberations of the committee which has just been appointed, under the chairmanship of Sir HUGH BEAVER, to examine the nature, causes, and effects of air pollution and to consider preventive measures, may strengthen public opinion, and so may the Ministry of Health's medical inquiry; but the wholesome dread most Londoners have of a recurrence of last year's episode may well be our most powerful friend. One way of hastening useful action would be for more of us to join the National Smoke Abatement Society.

Doctors and Inquests

WHEN his patient dies in circumstances which call for an inquest, what action should the doctor take? His duty is none too clearly defined. In trying to meet two interests—that of the registrar of births and deaths on the one hand, and of the coroner on the other—he may satisfy neither.

The doctor who has attended a patient in his last illness is obliged by statute to issue a medical certificate of cause of death "to the best of his knowledge and belief," and to deliver it forthwith to the registrar of births and deaths. The phrasing of section 20 (2) of the Births and Deaths Registration Act, 1874, which has now been re-enacted in a consolidating Act, is mandatory and explicit: "that practitioner shall sign . . . a certificate." Again, under section 6 (2) of the Births and Deaths Registration Act, 1926, "Every certificate of cause of death required to be signed by that section [i.e., section 20 (2) of the earlier Act] shall be delivered forthwith by the registered medical practitioner by whom the certificate is signed to the registrar . . ." It is provided by this subsection of the 1926 Act that, if an inquest is going to be held, the notice to informant, which the doctor is also required to complete, need not be delivered to the registrar; but as the subsection does not mention the certificate of cause of death, the certificate presumably must still be delivered. This is a change from the terms of the 1874 Act (section 20 [3]) which declared: "Where an inquest is held . . . a medical certificate of the cause of death need not be given to the registrar, but the certificate of the finding of the jury furnished by the coroner shall be sufficient." (At that time there was no notice to informant.) There seems little doubt, therefore,

that the Registrar-General is entitled to the view [1] that "as the law now stands, the duty placed upon a registered medical practitioner [i.e., to issue a medical certificate of cause of death] . . . appears to be unqualified, and unaffected by the fact that he or some other person has reported the cause to the coroner or that an inquest may take place."

Though certain persons have a statutory duty to inform the coroner of a death, the doctor is not one of these—unless the patient was certified as insane. The coroner's claim on the doctor derives from common law, by which "it is the duty of every person who is about the deceased [which includes the doctor] to give immediate notice to the coroner or to his officer or to the appropriate officer of police," who then communicates with the coroner.[2] This obligation, however, lacks legal force since there seem to be no means open to the coroner to compel obedience. He has powers to deal with those who obstruct him in the exercise of his duty; but this duty, and its coincident powers, cannot very well arise until he has been informed of the death. The situation has been further complicated by the growth of a practice which, though without the sanction of law, has evident advantages: many doctors, when they cannot certify that the death was due to natural causes, forthwith inform the coroner and withhold the medical certificate of cause of death. Obviously it is desirable that, when death is due to any unnatural cause, this fact should be brought to the notice of the authorities at the earliest moment, and it is clearly better to proceed in this way—illegal though it seems to be—rather than permit the relatives to experience the frustration and delay inevitable when the information reaches the coroner by the proper but devious route. In cases where death has been caused by a criminal act, procedural delay, even of only a few hours, can add appreciably to the task of the police. Delay must also be avoided where the circumstances call for a post-mortem examination: refrigerating-plant for the storage of bodies is scarce, and without it post-mortem changes may develop which impede discovery of the cause of death.

In the existing circumstances, it seems that the doctor's proper course is to inform the coroner of any death which he cannot certify as due to natural causes, and also to issue a medical certificate of cause of death, initialling statement "A" to show that the coroner has been informed. When the doctor does not know the cause, the space reserved for this should be marked "not known" or "uncertain." But the present situation is unsatisfactory. Whenever a doctor is uncertain of the cause of death, he should be specifically responsible for reporting the death to the coroner, after which any further action, so far as the doctor is concerned, should rest with the coroner. The coroner should be empowered to enforce immediate notification of circumstances which may necessitate the holding of an inquest. Furthermore, once the coroner has been informed of a death, the doctor should no longer be expected to issue a medical certificate of cause of death, unless so directed by the coroner.

1. Introductory notes and suggestions, supplied with each book of forms of medical certificate of cause of death.
2. Jervis, J. On the office and duties of coroners. Revised by W. B. Purchase. 8th ed., London, 1946.

Annotations

CONDITIONED AND AUTONOMOUS NEOPLASMS

WHEN a chemical carcinogen is applied to the skin, the resulting tumour has the character of an autonomous neoplasm; in other words, it arises and persists after application of the chemical has been discontinued. Two phases of genesis have been recognised: a phase of initiation, in which a small proportion of the epidermal cells are permanently altered to latent tumour cells; and a phase of development or promotion, during which the latent tumour cells multiply and induce visible and finally malignant tumours. The phase of initiation requires a specific carcinogenic substance; the phase of development can be brought about by the action either of a specific carcinogen or of a non-specific irritant such as croton oil. This explains the long latent period between the application of a carcinogen and the appearance of a tumour. It also implies that the primary change takes place in the epidermal cell itself and not in the adjacent or underlying tissues, though not everyone agrees on this. During the development of carcinogen-induced tumours there is a sequence of step-like changes, from normal epithelium to the subthreshold neoplastic state, thence to papilloma, and from papilloma to carcinoma. This has been called by Foulds [1] "progression," which signifies not merely augmentation of size or of properties already present but the development of new and irreversible properties along the path of sequence of the step-like changes. Progression may halt spontaneously for a long time at any point, and it does not necessarily reach an end-point within the life-time of the host.

In certain circumstances, tumours can be induced which owe their origin to alterations in the host outside the organ in which the tumour arises. Furth [2] has summarised much of the work in this field. Administration of goitrogens interferes with the thyroid-pituitary hormonal relationship, and results in the thyroid tumours by the following mechanism. Thiouracil does not injure the thyroid cells, but it blocks their ability to synthesise thyroid hormone (T.H.), thereby stimulating the pituitary to discharge an increased quantity of thyroid-stimulating hormone (T.S.H.). This causes tremendous hyperplasia and adenomatosis of the thyroid gland. These adenomas can be grafted into animals whose thyroid glands are blocked with thiouracil, but not into normal animals. The grafts, though dependent on the T.S.H. liberated by the thiouracil, often metastasise to the lungs. Similar mechanisms underlie the induction of tumours by interference with the gonadal-pituitary relationship. When ovaries are grafted into the spleen of spayed animals, the follicular hormones are transported to the liver by the portal vein and are there destroyed, with a resulting increase in secretion of gonadotropic hormones by the pituitary. This induces granulosa-cell tumours and luteomas in the heterotropic ovary. Many of these tumours still depend for continued growth on the presence of excess of gonadotropic hormones, but others become autonomous within the lifetime of the host.

Furth also draws attention to the fundamental part played by hormones in tumorigenesis. By analogy with the idea of the dual mechanism of initiation and promotion of tumours it might be supposed that these hormones act as promoting agents. By this interpretation, however, there must also be an initiating agent in the many types of cancer induced by hormonal changes. With mammary cancer in mice, such an agent can certainly be found in the Bittner milk factor; but there is no evidence, clinical or experimental, for a similar initiating agent in the case of the gonadal, thyroid, or pituitary tumours described. It would thus seem that the malignant change in these cases takes place through disturbance of the physiological

1. Foulds, L. *Ann. R. Coll. Surg. Engl.* 1951, **9**, 93.
2. Furth, J. *Cancer Res.* 1953, **13**, 477.

mechanisms by which the hormones produce their effects within the cell; but unfortunately practically nothing is known of the nature of these normal processes.

Such observations as these have led to the concept of dependent or conditioned neoplasms, dependency being a phase in the progression to autonomous malignancy. Huggins and his colleagues [3] have used this as the theoretical basis for advocating orchidectomy or treatment with stilbœstrol for retarding prostatic cancer, and adrenalectomy (with suitable cortisone maintenance) for mammary cancer. In some cases the primary tumour has regressed while the metastases have progressed; in other cases both primary and metastases have regressed. These observations indicate that control of the hormonal environment can prevent progression of dependent tumours to ever-increasing autonomy—perhaps a more rational means of saving life than either the surgical removal of established tumours or even the (still distant) prevention of tumours. Once more the clinician is being helped by researches which might at one time have seemed academic and unrelated to the problems of any one patient.

FOOD IN BED

AMONG the useful activities of King Edward's Hospital Fund for London is the promotion of better hospital catering. At an exhibition on Sept. 30, at the Fund's School of Hospital Catering (established at St. Pancras Hospital, London, two years ago), visitors had the opportunity of seeing hospital meals which had been cooked by the students, under the direction of the chef instructor, and of admiring the care with which they were served. The idea that food must *look* attractive is fast gaining ground in this country, and the idea that it should also taste delicious must surely follow. It was the confident belief of the chef of this school that his students' dishes not only looked good but had the right taste.

In the instructional kitchen every student has her own table and tools, and four double gas-cookers occupy the middle of the room. Upstairs are common-rooms, a lecture-room and a study; the students live out in lodgings arranged for them by the Fund. Courses are planned for various groups—catering officers and those about to become catering officers, head chefs and superintendents, and cooks and assistant cooks. The school also provides refresher courses for all grades of catering staff, arranges catering courses for hospital administrative and nursing staff, and provides a centre for lectures, demonstrations, discussions, and conferences relating to all aspects of hospital catering.

Linked with the school is the Fund's catering advisory service, which serves hospitals in all the four Metropolitan regions, sending to them on request a catering adviser, an equipment specialist, specialists in buying and costing, a designer draughtsman, and an adviser on kitchen management. All these had taken their part in the exhibition. Plans by the designer draughtsmen showed kitchens of many hospitals as the Fund's team had found them, and the same kitchens redesigned. A large model of one of these kitchens made it easy to see how the movement of a few pieces of equipment or machinery, a partition, a new route for trolleys, and similar simple alterations had reduced pandemonium to order and lightened the load on feet and tempers. A display of materials used in the structure and equipping of kitchens—modern types of flooring, new types of laminated plastic trays, aluminium alloys for pans, lift cords, bowls, hand tools, and many other things—showed how rapidly design is advancing in this field. All these things were explained to visitors by able and friendly members of the staff.

Dr. Charles Hill, parliamentary secretary to the Ministry of Food, whose short address, tossed together with a light hand, agreeably served, and sauced with a dash of tart humour, would have done credit to any cook, reminded members of hospital management committees (who seemed to be there in force) that they must not think the lunch they were given daily in the board-room was the same as the one being served in the wards; and urged them to send their cooks and caterers to the school to learn from the instructors and from each other. The school is a venture, he said, which deserves all the good will and publicity anyone can give it; and we warmly endorse that view.

3. Huggins, C., Bergenstal, D. M. *Ibid*, 1952, **12**, 134.

SUBDURAL EFFUSION WITH MENINGITIS

EFFUSION of fluid into the subdural space is now a recognised complication of bacterial meningitis in young children; and Ingraham and his associates [1] have lately described 50 such cases. In their series they adopted the following indications for diagnostic subdural "taps":

"(1) Failure of the temperature curve to show a progressive decline, particularly after 72 hours of adequate treatment; (2) positive C.S.F. culture after 48 hours of adequate treatment; (3) convulsions during the convalescent period; (4) focal convulsions at any time; (5) vomiting during the convalescent period; (6) gross neurological abnormality; (7) clinical impression that the course was unsatisfactory."

When fluid was found, subdural taps were repeated daily for 7 to 10 days; no more than 20 ml. of fluid was removed at any one session. Removal of the fluid relieved undesirable symptoms "almost immediately"; but despite this relief surgical exploration, with the aim of removing encapsulating membrane, proved necessary in no fewer than 42 of the 50 patients; and in 34 membrane was found.

Analysis showed that in patients over the age of 2 years effusions were hardly ever found; but in the first year of life 60% of all patients with influenzal, meningococcal, or pneumococcal meningitis developed significant subdural effusions. Ingraham and his colleagues believe that permanent neurological damage may result from these effusions, and they therefore advocate: (*a*) diagnostic tap for any of the indications in their comprehensive list of signs; (*b*) repeated daily drainage of the fluid, and (*c*) planned craniotomy, with wide excision of the subdural membrane.

This is a vigorous programme, and there is not yet enough evidence to justify its general application. Of Ingraham's 50 patients, 13 were treated before subdural effusion was systematically sought in all patients; and only 1 of these 13 children survived with intact mentality. Of the 37 cases diagnosed during the systematic survey, 22 have so far been followed for a year or more, and only 16 of these 22 are rated as normal. Ingraham contrasts the results in the two groups and concludes that the difference in results points to the value of his method of treatment. There are grave objections to comparisons of this kind. Moreover, if untreated subdural effusion commonly gave rise to cerebral damage, one would expect poor results in centres where subdural tap is rarely practised. Yet there are many series on record [2] in which lasting cure of purulent meningitis has been achieved in over 95% of cases, without common recourse to subdural taps. It seems that if effusions occurred in these cases, then they regressed spontaneously. Ingraham's figures show that in more than two-thirds of his patients whose effusions were tapped an encapsulating membrane developed later; and it seems possible that the taps themselves provoked this undesirable reaction in the meninges.

There is no doubt that subdural effusions do arise in purulent meningitis, nor that some effusions require neurosurgical intervention. Ingraham's routine requires

1. McKay, R. J., Ingraham, F. D., Matson, D. D. *J. Amer. med. Ass.* 1953, **152**, 387.
2. Levine, S. Z. Advances in Pediatrics. Chicago and London, 1952; vol. 4, p. 15.

surgical aid in the treatment of at least 60% of small children with purulent meningitis. There is no place for the tyro between the dura and the cortex; a highly skilled neurosurgical team will be needed to apply this technique. But first a number of questions should be investigated. Does the incidence of effusion vary with the antibiotics employed, with the route by which they are given, and with the dosage? Do all unaspirated effusions persist as encapsulated foreign bodies compressing and damaging the brain beneath; or do many effusions regress, leaving behind them merely some adhesions as harmless ichnolites? Only careful follow-up studies can answer these questions. The follow-up must be measured in years or decades, rather than months, for "mental defect is notoriously elusive in early childhood, while epilepsy commonly matures silently between the primary insult and the onset of seizures."[3]

The long-continued study of series of cured cases is a burden that cannot reasonably be laid on the shoulders of the overworked pædiatricians of this country; and studies by a sequence of registrars or assistants are unreliable. Perhaps the responsibility may be brought to rest with the new Clinical Research Board.

RESETTLEMENT OF DISABLED PERSONS

EARLIER this year the three Ministers chiefly concerned set up a Committee of Inquiry on the Rehabilitation, Training, and Resettlement of the Disabled[4] in this country, and its findings will be awaited with interest. Meanwhile we cannot help thinking that the Ministry of Labour and National Service is presenting some of the facts in less than due proportion. Its *Gazette*,[5] in speaking of the work of industrial rehabilitation units, has remarked that "the modest experiment which started at Egham in December, 1943, can be said to have marked the beginning of the discovery and use in this country of a new set of sociological techniques . . ." More recently, Mr. P. H. St. John Wilson, under-secretary in charge of work with disabled persons, is reported to have told the International Congress of the World Confederation for Physical Therapy[6] that Britain's system of industrial rehabilitation and resettlement of the disabled is in advance of any nation's in the world—a statement which scarcely does justice to the pioneer work on resettlement done in Denmark and certain other countries years before there was any official machinery of the sort in Britain, or to the current work of the Danish Invalidity Court which, particularly in the case of young disabled people,[7] has much to teach our Ministry. Mr. Wilson regretted that very few people realise that in this field of endeavour, "we are right out in front." This lack of awareness of our achievements, he went on, extends unfortunately to doctors almost as much as to any section of the lay community. "If the medical profession could give only one per cent. of their attention to this sphere, most of our resettlement problems would be solved." But if Mr. Wilson cares to read the history of work on the resettlement of the disabled in this country he will find that the medical profession was working on resettlement before his Ministry began to think about it. It was the report of the British Medical Association Committee on fractures[8] that stimulated the modern interest in the subject—an interest which led, in time, to the setting up of the interdepartmental committee which, in turn, prepared the way[9] for subsequent administrative action. Nor must it be forgotten that long before the inception of the centre at Egham, Mr. E. A. Nicoll was using with conspicuous success at Berry Hill Hall, in the reablement of injured miners, the techniques subsequently adopted at Egham; or that the L.M.S. centre at Crewe, the Seamen's Hospital at Greenwich, and a number of other centres up and down the country, particularly in the coalfields, were doing similar work.

Today 78% of all recruits to industrial rehabilitation units come from "medical sources"[5] which does not suggest that doctors are unaware of the Ministry's work. If they appear to be lukewarm in their enthusiasm for its activities in the resettlement of the disabled, the reason may sometimes be that they have been discouraged by its failure to give effective help to those patients whom they have referred to it. Of the hundreds of thousands of persons on the official Register of Disabled, even allowing for those whose disability scarcely interferes with working capacity, there are many who need help which they cannot in fact obtain. In a large series of disabled persons studied by Ferguson and MacPhail,[10] few had received training in new work suited to their disability: yet of 728 who were out of employment when the study was made, over 70% had worked less than half of the time since they registered as disabled persons from one to four years previously, and 40% had never worked since registration. Those who registered on the advice of doctors fared no better than the others. The lack of suitable vocational training, geared to a prospect of employment in suitable work at the end of training, is particularly serious in the case of disabled young people.

One gap in our care for the disabled has lately been filled by the Ministry's offer to help local authorities to set up and maintain workshops for severely disabled people.[11] Subsidies of this kind are already given for workshops for the blind and this provision is now being extended to sighted people who are severely handicapped. But there is still a long way to go before the official machinery for the settlement of disabled persons in suitable work is as good as it ought to be in this country. This is a matter in which there must always be a large medical element and to which medicine has undoubtedly a major contribution to make: perhaps the findings of the present committee of inquiry may point the need for fuller recognition of the medical implications of disability and the employment of disabled persons than has sometimes marked the administrative approach, even over a decade of "full employment."

MICROANGIOGRAPHY

THE term microarteriography[12] or microangiography[13] refers to the technique of radiographing the contrast-filled blood-vessels of an organ in such a way that the finer vessels are seen when the radiograph is enlarged. Microradiography, a somewhat ambiguous term, is the technique of producing radiographs that can be enlarged; and the information obtainable from microradiographs of biological material has been well reviewed by Engström.[14]

The difficulties of producing microangiograms limit their usefulness to thin organs or sections of organs; and, since relatively long X-ray exposure times are needed, the method is at present virtually useless in the living subject unless the organ is very small and accessible. The technique is useful because it may reveal the vascular anatomy of tissue a little thicker than that which can be conveniently studied by ordinary histological methods. The tissue must not, on the other hand, be too thick; for then the wealth of detail may be self-obscuring, and it may be impossible to see the trees for the wood. Microangiography depends on radio-opaque contrast media and X rays, whereas more standard methods depend on coloured injection masses and light. The

3. Smallpeice, V., Ounsted, C. *J. Neurol. Neurosurg. Psychiat.* 1952, **15**, 13.
4. *Min. Labour Gaz.* April, 1953, p. 120.
5. *Ibid*, August, 1953, p. 263.
6. *Scotsman*, Sept. 12, 1953.
7. Ferguson, T., MacPhail, A. N., McVean, M. I. M.R.C. Memorandum, no. 28, H.M. Stationery Office, 1952.
8. *Brit. med. J.* 1935, suppl. Feb. 16, p. 53. Feb. 23, p. 69.
9. Home Office, Ministry of Health and Scottish Office. Final Report of the Inter-Departmental Committee on the Rehabilitation of Persons Injured by Accidents. London: H.M. Stationery Office. 1939.
10. Ferguson, T., MacPhail, A. N. *Glasg. med. J.* August, 1953, p. 343.
11. Ministry of Labour Circular D.P. 636/3/51
12. Barclay, A. E. Micro-Arteriography. Oxford, 1951.
13. Bellman, S. *Acta Radiol., Stockh.* 1953, suppl. 102.
14. Engström, A. *Physiol. Rev.* 1953, **33**, 190.

injection of any contrast substance into the vascular system during life may fail to show individual vascular channels if, at the moment of observation, the contrast medium is not flowing through them in sufficient concentration, or if with the method of display the definition is inadequate. Similarly, injection masses in necropsy material may for various reasons not demonstrate a given vascular channel, even though this is patent.

Microangiography may often be a useful ancillary method,[15 16] but equivalent results are usually obtainable by other techniques. Should it prove possible in the future to take rapid serial angiograms of organs in life which can then be enlarged, then this technique may sometimes yield information that is otherwise unobtainable.

ASSESSING A COUGH SUPRESSANT

THE obvious way to test the value of a cough-suppressant drug is to give it to patients with coughs and observe the result. This is the method that Cass and Frederik[17] have adopted in a trial of the new antitussive agent, dextromethorphan. But their study shows that even such a simple experiment must be conducted with extraordinary care. Their plan was to have the patients themselves, their nurses, and their own ward doctors record the severity of the cough four times daily, on an arbitrary numerical scale from 0 to 4. During a 45-day period the patients received medication four times daily with various substances, the nature of which was unknown to themselves and to the other observers. These substances were dextromethorphan hydrobromide, codeine, and an inert tablet—the last two representing positive and negative controls. Three batches of each substance were prepared, and each of these nine batches was identified solely by a code number. Every patient received successive 5-day courses of each of the nine batches, the order in which they were given being decided at random and differing for each patient. For a study on this plan to be statistically irreproachable, the nine batches should be given in every possible sequence; but this requires the participation of 362,880 patients. Cass and Frederik were content to screen 1400 patients, from whom they selected 160 as having a cough of suitable degree and duration. For one reason and another in only 65 of these patients were records completed. The observations made by the patients and nurses had to be rejected because of gaps. This left only the records made by the ward doctors, and even these were not above suspicion. One such observer is reprimanded by the authors for cheating—he apparently kept a box score of his observations in an attempt to decode the drugs prematurely—but, once this was dealt with, "no personal feelings were allowed to colour any of the observations." Eventually a series of over 11,000 numbers was obtained, representing the cough severity in 65 patients for four periods a day during 45 days. It might seem that the effectiveness of the three substances could then have been compared by adding all the numbers obtained for cough severity for each substance in turn. But the statistical analysis showed that such a course would yield a fallacious result, because the differences in cough-behaviour between individual patients receiving the same medication were greater than the differences in the same patients receiving different drugs. When allowance was made for this variation by an appropriate mathematical manipulation a further difficulty arose. One of the three batches of dextromethorphan was found to be apparently less beneficial than the placebo. This evidently was the price Cass and Frederik had to pay for reducing the number of patients below the statistical ideal: random selection had resulted in this particular batch of drug having followed codeine more frequently in the sequence of administration than had the other two batches. But the conclusion finally derived from this study cannot be seriously questioned: it is that dextromethorphan hydrobromide in a dose of 4 mg. is an effective cough suppressant, with about half the effectiveness of 17 mg. of codeine. Cass and Frederik think that 10 mg. of the new drug may have about the same effect as 17 mg. of codeine.

The pharmacological interest of this work is that dextromethorphan belongs to the new series of morphinan substances the members of which exert some or all of the actions of analgesia, central depression, addiction liability, and cough suppression. The synthetic analgesic racemorphan ('Dromoran'), the best-known member of this group, is related to dextromethorphan chemically much as morphine is related to codeine. Dextromethorphan has been shown to be devoid of addiction liability,[18] and to cause no central depression[19]; and this latest study confirms that the definite antitussive action of a 4 mg. dose of the hydrobromide is unaccompanied by side-effects.

THE SHORT BIRTH CERTIFICATE

THE fear that short birth certificates would be sought only by those whose parents were not married, and hence would become tantamount to certificates of illegitimacy, has proved to be quite unfounded. A subcommittee appointed by the Magistrates' Association,[20] to inquire into their use, draw attention to the study made by the Registrar-General between the end of 1947, when the certificates were first issued, and 1951. This showed that, for local offices, the proportion of short certificates rose from 40·5% of the total issued in 1948 to 62·5% in 1951. At Somerset House the rise was less striking over the same period: from 26·2 to 30·4%; but even this is sufficient to ensure that the certificates are not being sought by the illegitimate alone. From the end of 1947 until the end of 1952, about 4 million short certificates were issued; and there were only 2 million illegitimate people in England and Wales at the time, not all of whom had had occasion to get birth certificates. Thus it is evident that legitimately born people had felt no disquiet about taking the shorter form.

The subcommittee are still concerned, however, about the position of foundlings, whose certificates carry a statement that they were born "on or about" such-and-such a date; and this might reveal them as foundlings to the informed or the curious. Similarly, short certificates issued to children who have been adopted give only the country of birth and not the district, which could betray them as being adopted children. The committee is considering ways in which these aberrant types of certificate may be brought into line, thus supporting the principle of a fair start and no favour.

Sir EDMUND BRITTEN-JONES, F.R.C.P., consulting physician to the Adelaide Children's Hospital and a former vice-president of the Royal Australasian College of Physicians, died on Sept. 30 at the age of 64.

Prof. EDWIN COHN, of Harvard, whose work on the fractionation of blood-plasma has found many valuable applications in clinical medicine, died on Oct. 1 at the age of 60.

WE also regret to announce the death of Dr. FLORENCE SABIN, of the Rockefeller Institute, long distinguished for her work in hæmatology.

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15. Ardran, G. M. *In* Modern Trends in Diagnostic Radiology. Ed. J. W. McLaren. London, 1953; series II, chapter v.
16. Trueta, J., Harrison, M. *J. Bone Jt Surg.* 1953, **35B**, 424.
17. Cass, L. J., Frederik, W. S. *New Engl. J. Med.* 1953, **249**, 132.
18. Isbell, H., Fraser, H. F. *J. Pharmacol.* 1953, **107**, 524.
19. Benson, W. M., Stefko, P. L., Randall, L. O. *Fed. Proc.* 1952, **11**, 322.
20. Thirty-third Annual Report, 1952–53, Pp. 39. Obtainable from the secretary of the Magistrates' Association, Tavistock House South, Tavistock Square, W.C.1.

Special Articles

FURTHER ADVANCES IN PATHOLOGY*

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THE hope with which we peer into the future at any time is apt to be tinged with a certain amount of anxiety, and both emotions are heightened when evolution is rapid. At such periods it is useful to examine the main lines of evolution, and to discuss them as frankly as possible. By so doing we may, in some fashion, shape our course and avoid certain pitfalls.

No-one is likely to challenge the assumption that pathology will continue to make important advances in the near future in respect of acquired knowledge. I am, however, less concerned with this aspect of progress at the present moment than with the practical problems created by the growth of knowledge, and consequent specialisation. I propose to discuss some of these problems, and to suggest a few possible ways of mitigating the difficulties that already threaten the organisation of our various branches of study.

HISTORICAL BACKGROUND

The development of pathology up to the present century, and its subdivision into different branches, is a familiar story, and therefore one upon which I do not propose to dwell at length. It will suffice to remind you of a few facts.

Morbid anatomy is as old as medicine itself and, until the middle of last century, was practised by the clinician, who was thereby enabled to correlate his observations at the bedside with the naked-eye appearances of diseased organs. Keen observation backed by intelligence yielded a rich harvest at the hands of such as Richard Bright, Addison, and Hodgkin—to mention a few. The subjection of morbid anatomy to the subtler processes of histopathology, and the microscopic analysis of changes seen with the naked eye, led to the establishment of laboratories with all their paraphernalia, including the hierarchies of academic and technical staffs. This paved the way to the transference of post-mortem dissections from the hands of the clinician to those of the pathologist. Not without local struggles, however, because many clinicians set great store by this first-hand experience. In the early part of the present century the physicians at the London Hospital habitually performed post-mortem examinations and, in that capacity, were dubbed "visiting pathologists." Their visits lacked punctuality, and their dissections were not always edifying either to the medical students or to the pathologists who had to report upon the results! My predecessor, Prof. H. M. Turnbull, insisted upon punctuality; and whether it was due to this ruling (which I am sure he enforced), or to the meticulous technique which he imparted from his previous studies in Dresden, or perhaps to an access of wisdom, it is hard to say, but the attendance of the "visiting pathologists" gradually tailed off. After the first world war there was only one, to my recollection, who put in a regular appearance for this purpose. But his punctuality and standard of performance were both high; he was a welcomed "visitor."

At this time it was rather fashionable to write off histopathology as effete. The objects of our study beneath the microscope were held to be conglomerations of artefacts; moreover the Germans had mapped out everything of importance, and little remained for discovery. Never was a judgment more erroneous! At the present time new fields are opening out in histochemistry and cytochemistry, and new kinds of microscope reveal structural details that were hitherto unknown. Fresh aspects of disease are constantly appearing for various reasons; they demand vigilance and adequate investigation.

The rudiments of what we call *clinical pathology* are of equal antiquity, if we include the gross examination of various secretions and excretions. But clinical pathologists, and the laboratories sacred to them, are of recent date. They often started their existence in a hole-and-corner fashion within the larger hospitals at the instigation of honorary consultants who realised that such laboratory services could be of value to them. Such, at any rate, was the mode of origin at the London Hospital. The amenities provided there have been described by the late Sir Philip Panton, in his *Leaves from a Doctor's Life*,[1] as "a single room together with a staff of one extremely ignorant technician." When it is recalled that this was the meagre beginning some fifty years ago, the rate of subsequent development has been startling. In particular we may note the extraordinary importance of hæmatology, which bids fair not only to establish itself as a separate discipline, but even to indulge in subdivisions of its own.

In *bacteriology* we have witnessed a similar kind of growth and specialisation. The late Professor Bulloch, who occupied the chair of bacteriology at the London Hospital Medical College from 1919 to 1934, used to give lectures in general pathology. As well as being an eminent bacteriologist he was in fact a sound pathologist, with a wide knowledge of the various branches as they then existed. In his early days he was a student of neuropathology, and he retained his interest in the silver impregnations for neurofibrils and axis-cylinders. I possess an elegant preparation of Auerbach's plexus made by him as a by-product when he was working on the sterilisation of catgut a few years before his retirement. But today the academic bacteriologist may devote himself to the study of viruses, or immunology, or to some other aspect of microbiology. His terminology is so specialised that it is often difficult for others to take an intelligent interest in his scientific communications. His opening gambit is often a complicated table, thrown upon the screen with the minimum of preamble, which (to quote the late Prof. E. H. Kettle) provokes an antibody reaction in the unversed beholder! I shall revert to this matter later.

Chemical pathology came relatively late upon the scene. Founded upon organic chemistry, which itself underwent systematic development in the 19th century, the subject was still in embryo until after the first world war, when colorimetry came into its own and greatly extended the scope of chemical analysis of the body-fluids. A number of other refined methods of analysis have recently come into use. Chemical pathology is still engaged in the struggles bound up with its expansion, and emancipation from a position subordinate to clinical pathology.

THE TENDENCY TO SUBDIVISION

At the present time, therefore, we are all fully aware of this steady and rapid growth of the various branches of pathology, and the tendency of those branches to subdivide into further subgroups or specialties. We recognise also that this tendency is not peculiar to pathology, but is a general feature of medicine and, indeed, of other sciences. The situation in medicine as a whole has been examined by Sir Russell Brain in his annual oration to the Medical Society of London.[2] He traces the ways

* Presidential address delivered before the Association of Clinical Pathologists on Oct. 2.

1. Panton, P. N. Leaves from a Doctor's Life. London, 1951; p. 134.
2. Brain, W. R. *Lancet*, 1953, i, 959.

in which the various clinical specialties have become separated—a process of disintegration and differentiation. Side by side with this there are certain points at which reintegration takes place, owing to the necessity for mutual aid in diagnosis and treatment amongst the specialists.

We have heard much, in recent years, of the necessity for integration and synopsis in relation to medical education. But, although we may have subscribed in theory to the proposals made by the learned authors of sundry reports and memoranda, I submit that so far little attempt has been made to put the advice into practice. This is explicable because a reasonably integrated presentation of medicine, including of course pathology, is not feasible unless those responsible for the growing points of knowledge—namely, the active researchers—will undertake the responsibility for integration amongst themselves. This point needs further elaboration.

THE SPECIAL PATHOLOGIST

Since the practice of pathology necessarily goes hand in hand with clinical medicine, it follows that special lines, for example, neuropathology and ophthalmic pathology, have tended to be segregated in hospitals devoted to these specialties. In past decades the pathology at such hospitals was often unsatisfactory because the office of pathologist was occupied by the aspirant to a clinical appointment. He therefore used the laboratory appointment, which was generally part-time, merely as a stepping-stone. The main brunt of the laboratory work was borne by a senior technician who often acquired authority to a formidable and unhealthy degree! This arrangement has properly given place to a system of full-time and permanent special pathologists. Their segregation, however, carries with it certain dangers to the interests of pathology as a whole; and this, I think, applies particularly to histopathology. In the first place they may fail to appreciate the importance of correlating their observations with the pathology of the body as a whole. They sometimes in fact become curiously detached in this respect. I once overheard, in a neuropathological laboratory, a somewhat contemptuous reference to the extraneural tissues as "the trunk tissues." Another menace lies in the elaboration of special nomenclatures which tend to alienate their users from pathologists in general. Ophthalmology is a conspicuous example of this habit. Amongst neuropathologists there is an affection for German terms, or for literal renderings of German expressions, in their special nomenclature. This is confusing for others and appears to me absolutely unnecessary. There can for example be no excuse for the use of the term *Gitterzell* when the perfectly good equivalent of "foam-cell" is ready to hand, or for the description of a loss of neurones from some part of the nervous system as "an outfall." I would plead therefore for the simplification of nomenclature, and the application of terms in general use to special instances whenever possible. And this recommendation applies not merely to histopathology, whence my examples are taken, but to all branches of pathology. The alternative development will simply lead to a confounding of language—in other words Babel—in which none will understand what the others are saying.

Were it possible to wipe the slate and start afresh, there would be a strong argument in favour of the development of such special lines as pædiatrics, neurology, ophthalmology, and so forth in intimate association with institutions concerned with general medicine. In modern hospital-planning this kind of centralisation is in fact favoured. The arrangement would permit of a centralised department of pathology in which special pathologists could pursue their separate lines to the mutual advantage of all. From personal experience I can testify to the advantage of this, since I have practised neuropathology as a special line both in a general pathological department and, later, in an independant laboratory segregated in a neurosurgical unit. The latter arrangement carries certain undeniable benefits both to the pathologist and to the clinician. But on balance, since there must necessarily be a choice between these alternatives, I think the greater advantage lies in having the neuropathologist (or any other special pathologist) incorporated as a unit of a larger department of pathology, with whose personnel a mutual exchange of views and criticisms is possible. It will be recalled that this was also the recommendation of the Goodenough Committee in 1944.[3]

This recommendation needs further emphasis on account of the growing tendency towards specialisation on the part of hospital clinicians, and the fact that these clinicians are turning with increasing eagerness towards the laboratory for help. They recognise now that histopathology, far from being effete, has still great potentialities in illuminating the obscurer corners of clinical study. The close coöperation of clinician and pathologist has indeed become more than ever imperative. Unfortunately, however, the routine hospital pathologist has neither the time nor, in many respects, the necessary background of knowledge to satisfy all these requirements. He may, and often does, devote such time as he can spare to research in one particular specialty. Thus the only satisfactory solution would be the employment of as many pathologists as the importunity of clinical specialists may demand for the solution of their problems. But neither space nor money are available to implement this either now or in the immediate future.

SCIENTIFIC COMMUNICATIONS

I must turn now to other questions arising more directly from research and, in particular, the communication of the results of research to others. We are faced with difficulties arising both from the rapid increase in the membership of our societies, and from the intrinsic character of the communications read at meetings. The Pathological Society of Great Britain and Ireland is now so bulky that it is usually necessary to split the programme in two concurrent parts, thus divorcing the bacteriologists from the rest. Both are thus deprived to the detriment of both. But this arrangement, loudly regretted by so many members of this society, is a kind of segregation that is sometimes actively sought by other groups in pathology. Thus a few years ago there was a bid to set up a separate section of hæmatology in the Royal Society of Medicine. Many of us felt this to be undesirable since it would have weakened the section of pathology. Again, within recent months, an Association of Clinical Biochemists has been created. While the council of the Association of Clinical Pathologists has formally welcomed this new step, it is ardently hoped that it will in no way impair the participation of the biochemists in our more general meetings.

There is of course nothing to prevent any group of specialised workers from forming a society for the purpose of discussing their own particular problems and much profit may be derived from such discussions. But I hold that no specialised society of this kind should detract from the membership of, and active participation in, more general societies. We may indeed visualise a possible evolution of our societies whereby those of a more general character and membership may come to exercise their most important function as a medium for the interpretation and correlation of the growing points of knowledge. I look forward, in short, to a phase of

3. Report of the Interdepartmental Committee on Medical Schools. H.M. Stationery Office, 1944; p. 141.

development in which experts will probably herd together in numerous small but highly specialised societies. They will doubtless air their views in terms incomprehensible to others. But the more clear-headed and thoughtful of these experts should be able to present the results to a general gathering of pathologists, using terms that the majority at least can understand, and relating any advances made both to basic principles and to cognate disciplines. In the meantime we may flatter ourselves that the Association of Clinical Pathologists, incorporating as it does all the main branches of pathology that are applied to clinical medicine, is of the greatest value in holding together our various interests, and in maintaining a nice balance between academic and non-academic practice.

ROUTINE AND RESEARCH

At this point I should like to say a few words to pathologists of the non-academic category. Perhaps they sometimes feel that they are overburdened with routine work and that research is outside their orbit. There are, however, notable exceptions, as we well know. The combination of routine work and research is in itself admirable, and all routine workers should command sufficient technical and other support if they are inspired to carry out original investigations. In many instances this support is wholly inadequate. I gather, however, from the columns of the *Manchester Guardian*,[4] that the Minister of Health recognises the prime importance of developing laboratory facilities in order that this country may not fall behind in the field of investigation. We may hope therefore for further expansion when restrictions on capital expenditure are relaxed.

It is perhaps insufficiently appreciated that academic pathologists, on the other hand, are often too overburdened with routine duties to give such attention to original work as is demanded by the universities. But it is common knowledge that advancement is only gained by means of substantial publications. Hence the bloated condition of our journals and the congestion of editorial desks. In fact Alan Gregg [5] states: "I know of one department in an American University where the value of a man was estimated by the number of pages he had published divided by the number of years he had possessed the PH.D. degree. It was a department of psychology." Research is surely a laboured conception at the present time, and an umbrella for much that is inept. On the other hand, there exists the inspired researcher who would worthily fill a chair, but who rejects this proposition from the knowledge that acceptance of professorial status, with its inevitable burden of administrative work, would prove crippling to his main interests. Sacrifice of position and financial reward is the penalty for his decision.

THE WHITE-PAPER AND ITS CONSEQUENCES

Such a situation calls for remedy, and we may hope, from the recent white-paper on clinical research,[6] that a solution is within sight. In the first place, it recommends arrangements for "decentralisation," enabling hospitals to promote research with the greatest possible freedom and without detailed supervision. Secondly, it rejects the principle that the research-worker should be paid less than the clinician; thus the man who has a genuine flair for research could look forward to the prospect of a research career without the sacrifices previously entailed.

The various branches of pathology must surely be affected by these proposals. There are few forms of clinical research that do not involve extensive laboratory investigations, and one may perhaps envisage the future director of research as a person who has been so well trained both in the wards and in the laboratories that he can coördinate the researches of juniors who are working in either. In the sphere of pathology we probably are all acquainted with the man who has the ability and inclination to do whole-time research, but has no wish to be segregated in an institute which is entirely detached from hospital work. His interests lie in the application of his observations to clinical problems. He must therefore attach himself to a hospital to gain the stimulus and the opportunities required. But at the present time there is virtually no provision for a worker of this kind. A few research fellowships are available here and there: their tenure is usually limited, and the salaries attached of an order that anyhow opposes long tenure. It is obviously unreasonable that whole-time research should entail celibacy. These research fellowships should serve a valuable purpose as a testing period for those who show promise, and are gifted with the various attributes that we regard as desirable in a prospective researcher. But when the testing time is over, and a reassessment shows that the candidate has proved himself, a permanent post at advanced remuneration should be his reward. Reverting to the white-paper, we must, like Mr. Micawber, hope that something will turn up!

Finally, I should like to notice the recommendation of the white-paper that the central research organisation should be empowered to make, when necessary, arrangements for work abroad. Either individual researchers or units might profit in this way. The profit would also extend to the centres visited in the case of those that are geographically isolated, or lie in the more backward countries. This conception is in close harmony with views expressed this summer at the Cambridge Congress of Commonwealth Universities. An increasing degree of free movement of scholars between these constituent universities would confer an inestimable benefit not only upon the scholars themselves but also upon the growth of mutual knowledge, good will, and understanding. In pathology we are aware of many racial and geographical variations in the pattern and kinds of disease. These demand investigation not only for their own sake, and for the sake of those who suffer thereby, but also because their study would doubtless lead us to a better understanding of our own diseases.

Our outlook and teaching in this country are far too parochial; the enrichment gained by periods of work abroad is, in my view, a target that we should set as a desideratum for all. Before settling down it would be no bad thing if it were obligatory for every young pathologist to undertake a spell of study, and if possible research, in some other part of the Commonwealth as part of his training. Were this accepted as a general rule, the fear of being forgotten, or of slipping off the academic ladder, would lose its force. And doubtless it is that fear, as well as the present absence of any proper financial provision, that has inhibited the otherwise bold spirit from embarking on a venture that might prove so profitable to himself and to human society.

THE ASSOCIATION OF CLINICAL PATHOLOGISTS

There are doubtless many aspects of my subject that have been left untouched, but I have said something of those that appeal to me as most important. And I have chosen this occasion for the purpose from my conviction that it lies more within the power and scope of this association than of any other body to maintain the integrity of pathology in the face of growing diversification.

4. *Manchester Guardian*, Sept. 23, 1953, p. 3.
5. Gregg, A. Furtherance of Medical Research. New Haven, 1941; p. 108.
6. Clinical Research in Relation to the National Health Service. H.M. Stationery Office, 1953.

The Widdicombe File

III. ORGS ?

MY DEAR WHIDDON,

I owe an apology to you and to your house-surgeon. To him because I rebuked him more sharply than mere ignorance deserved, and my only excuse can be that his youthful appearance—is there still a minimum age for medical registration ?—brought out the old dominie in me. To you because in rebuking him I usurped your locum parentis (or locus ?—a nice point of usage). I should have remembered that it is your custom to include good manners and common sense as part of the education of the young surgeon.

The young man reflects little credit on his previous teachers. I am accustomed to those who use my laboratory as a sort of penny-in-the-slot crystal ball from which all the answers to their silly questions may be obtained in a twinkling ; but on that morning I was out of sorts and jibbed at the specimen of fæces accompanied by the bald query " Orgs ? " Do you blame me if I returned the immediate answer " Present " ? I hoped that by this brutality I might impress on his mind that useful answers are possible only to useful questions—but the blame is not his. I have little doubt that bacteriology is the worst-taught subject in the curriculum. It takes up a good deal of time which the student might spend better in the wards and leaves him with some ill-digested applied botany, a lot of names learned by rote, and the illusion that if he sends any specimen to the laboratory he will receive the correct diagnosis on a plate without further effort. If it is taught apart from general pathology —as it usually is—he forgets that bacteria by themselves are no more harmful than puddocks in a pond. Because they are " classical " he learns a lot about typhoid and plague bacilli and the pneumococcus as parasitic members of the vegetable kingdom, but about whitlows and inflamed tonsils very little and he seldom knows how to immunise his own child against diphtheria. Do you still devote much time to teaching the surgical treatment of aneurysms ? Because bacteriology in the medical school is divorced from medicine and surgery it is only after years in practice (or six months as your H.S.) that he learns that the findings of the laboratory are no more than physical signs, of the same order of truth as those which he detects with his own eyes and hands. Their diagnostic value resides not in any single one of them but in the sum total.

* * *

If I were to return to teaching perhaps I could not do much better. I am not frightened of the vested interests of those who earn their bread that laborious way or of those who collect the fees from examination candidates. The truth is that I hardly know enough bacteriology in its applications to medicine to let me teach it without a good deal of misgiving. If I am injecting a mouse with anthrax bacilli and I let the needle slip into my finger I know I have done a foolish thing ; but I also know from experience that I am not bound to suffer an infection. Do you remember our happy meeting—happy for me at any rate—in Deolali on our way home from SEAC ? We both wished to buy some ornamental trash as evidence that we had in fact seen the glorious East ; but the bazaar was out of bounds because there had been two cases of bubonic plague there. Now I will bet my boots that that bazaar held all the textbook essentials for a thundering good epidemic—humans and fleas and rats beyond the dreams of a rodent exterminator's avarice—and there were just two men suffering from plague. When I used to give my lecture on plague to the students I used to tell them to read *Martin Arrowsmith* ; but I am glad that none of them asked me the questions I asked myself in that bug-infested tent.

Contrariwise the other day I saw an outbreak of infectious disease which should never have happened at all—according to the books. An entire respectable middle-class family were prostrated with a salmonella infection. The housewife set a standard of cleanliness which I seldom see in my own home (I trust to your discretion) ; they had had no visitors ; they had not eaten elsewhere ; their food came from the same shops as did their healthy neighbours'; and they had not touched duck eggs or mutilated meat or any such thing. Students learn about natural and acquired immunity and minimum infective doses. I wonder how many teachers add that as far as our knowledge goes today none of these things explains many of the common phenomena associated with infectious disease. I think I am right in saying that no-one really knows what touches off a major epidemic. Greenwood, who knew and thought more about these things than most of us, postulated besides the parasite and its host a tertium quid—which is a decent and scholarly way of admitting ignorance.

* * *

But these are more than subjects for academic speculation. Twice in recent weeks I have seen incidents in our own maternity block which underlined my own ignorance.

The first arose from that rarity of these days, a classical puerperal infection with hæmolytic streptococci. No-one else was ill, patients or staff, but Matron showed a praiseworthy anxiety lest one of her nurses might have been the source of infection. I had forebodings of trouble and no doubt she put down my hesitations to idleness. I yielded—of course—and we looked at the throat and nose swabs from the twenty-five nurses and etceteras who staff the block. Eight of them harboured hæmolytic streptococci in their throats ; but—and this meant a lot of hard work for somebody else—none of these were of the same " type " as that in the original sufferer, and, in fact, we never found whence her infection came. (In the book one of the nurses would have been a nasal carrier who had been on duty in the labour ward when the last similar infection occurred nine months ago.) The one problem had left us with another. Here were eight girls carrying a potentially dangerous organism in their throats in the presence of patients traditionally susceptible to severe infections. If we took them off duty one ward would have to close, perhaps two. If we did nothing we should look worse than mugs if a second infection occurred. The epidemiology of puerperal infections has received the attention of some pretty distinguished brains since Semmelweis, but I could not base my advice to Matron on anything better than an ill-informed guess of the risks involved. In the end we let the carriers stay on duty, chewing penicillin gum, but kept them out of the labour wards. As no other infections were noticed Matron thinks rather well of me.

A week or two later another patient ran a mild fever after delivery, and, as is usual and proper, they took a swab from her cervix. I found a little pus on it and the culture grew *Bacterium coli* and *Streptococcus faecalis*. My staff, unasked and probably unwisely, found and reported that both of these were sensitive to chloramphenicol, and with this the patient was treated. Her fever, by the way, had subsided before my report reached the ward. Were these organisms the cause of her fever, and, if so, did they justify the use of a drug which is not without its dangers ? After the event the answer to the second question is clearly " No " ; but the first is an example of a difficulty which I meet every day. These organisms

are normal inhabitants of the bowel, but both are capable of causing infections elsewhere in the body. Neither is a normal inhabitant of the vagina, but my faint memories of obstetrics suggest that even the best-conducted labour gives some opportunity for the mechanical transfer of these organisms from the anus. Here we found them associated with pus, and in my simple way I have always assumed that pus is evidence of an inflammatory reaction. Does the trauma of childbirth produce such a reaction, or is the pus evidence of infection, albeit a low-grade one? At this point I begin to think about angels on a needle's point. We just do not know if the fever was due to infection with these organisms, and I believe the house-surgeons erred in assuming that it was. In fact he gave more weight to our report based on "scientific" methods than to the plain fact that by the time he received it the patient was very well indeed. I see this impulsive urge to treat first and think afterwards so frequently since we have had the omnipotent antibiotics that I suspect some of our junior colleagues of believing that the only good bacterium is a dead bacterium.

* * *

The medical wards plague me with requests for "the prevalent organism" in sputum. I wish I knew how this heresy arose. Much of what is labelled "sputum" is, of course, saliva; but I will overlook the difficulties which arise from this. Until I am blue in the face I have pointed out that the prevalent organism as seen in a stained film of the material is seldom the organism most numerous in my cultures. Let me choose the medium and I will give them pneumococci or coliform bacilli or yeasts for an answer. The physician's assumption is, I suppose, that the most numerous organism is the one which is causing the patient's illness and that if he can exterminate it with this or that expensive antibiotic the poor chap will get better. I am not competent to discuss the second part of the argument, but my experience has been that the commonest effect of antibacterial treatment alone has been to replace one organism with another almost as likely to cause disease. If I judged by numerical prevalence alone I would not give much weight to the tubercle bacilli in an open cavity.

In appraising the bacteria in sputum we are guided by the analogy of infections elsewhere in the body and by the dogmatic simplicity of the textbook which labels some organisms "pathogenic"—pneumococci and influenza bacilli—and some "saprophytic." There are, I believe, very few organisms—tubercle and perhaps anthrax bacilli—whose presence in the sputum is evidence per se of disease. The great majority—whatever their labels in the book—can enjoy a parasitic life in the human windpipes if the environment is suitable. In the sense that a staphylococcus causes a boil I rather doubt if any organism "causes" chronic bronchitis. If I am wrong I do not know of any evidence derived from parasite or host which will let me put the blame on the right shoulders. Perhaps they all have a share in the work. We know next to nothing about bacterial symbiosis, and I sometimes wonder if the flora of the bronchial tree does not play a part akin to that of the bowel—a part largely beneficial to the owner of the tree. Perhaps the effect of a few doses of penicillin on the man with chronic bronchitis is rather like that of a few days on yoghourt—it stirs up the flora like a gardener with a hoe.

* * *

Being a hospital bacteriologist is a very difficult job. In the golden age of bacteriology—say up to 1906—it was the Pasteurian dogma of specificity which made the science so exciting and so satisfying. Like causes like. Here are two patients who suffer from what appears to be the same ailment: the microbe—an old word not used enough—common to both will be the responsible agent. (The biggest blob was beriberi, and the evidence for its infectiousness was better than most people think.) Nowadays specific infections seem, regrettably, rare. We bacteriologists deal mostly with material from bronchitic chests and dirty wounds and—saving your presence—ancient sacculated bladders. Once upon a time we used to spend our days searching for specific organisms—typhoid bacilli or gonococci—to confirm half-made diagnoses; now we look for an unknown organism which will give a guide to treatment. We have all the elegant equipment we can reasonably want. We use methods of beautiful refinement and we seldom meet any organisms to which we cannot give a name with a clear conscience. Our chief trouble is, I think, that our methods were designed for other ends. Some, as I have said, are meant to reveal a specific organism which will confirm a diagnosis—and some work of this kind will always be with us. Some—and these are the most refined—were designed to help the epidemiologist. Improvements in culture media let me detect the scanty typhoid bacilli lurking in the carrier's bowel, and for this purpose are better than the older and simpler media. When we used to use these I have no doubt that we missed many carriers, but we were no less successful in confirming the diagnosis in an established case of enteric. The price which we pay for detecting the single typhoid bacillus is the likelihood of overlooking other organisms of importance which will not grow on these eclectic media. This is probably why we were rather slow to spot that certain severe infections of infancy are due to a strain of *Bact. coli*: indeed I have heard that these first came under suspicion by reason of the smell of the fæces rather than by the orthodox methods of the laboratory. (Of course the nose is useful in the laboratory—but don't tell anyone I said so.) Epidemiology is an almost unhealthily fascinating subject, but its charms have tended to seduce the hospital bacteriologist from his job—which is to assist in the diagnosis and treatment of the sick.

Our other trouble arises from the fallacy that certain organisms are pathogenic and the others are not. You can tell the pathogenic ones because there is a list in the textbook, and if I find one in a specimen it must be the cause of the patient's disease. If I cannot find one the disease is due to a virus or is the province of the trick-cyclists. Of course this is plain biological balderdash; but you would be surprised how often I meet it. "Pathogenic" and "saprophytic" are useful words in writing reports—I use them myself quite frequently—but I really think that they are applicable only to one organism in one site in one patient. I have stroked a lion—with misgivings—and have been bitten by a rabbit.

What we usually lack is evidence of the pathogenicity of any one organism in an individual patient at a given time. There are exceptions. The most convincing is the rise in the titre of antibodies in a patient's serum during the course of illness—especially if the same organism can be found somewhere about his person. It is an old method which might repay examination if applied to some of the infections which appear to be non-specific.

I am not so far sunk in doubting apathy that I attribute no importance to the meningococcus in the purulent cerebrospinal fluid or the streptococcus in the blood of a patient with the signs of endocarditis. I do not really doubt that hæmolytic streptococci cause tonsillitis; but I wish I knew if non-hæmolytic streptococci do much the same thing. I rather think that the botanical origins of our subject and the charms of our technique have led us for too long to look harder at the parasite than at its host—and the second is the way for future advances.

Perhaps these will never come. Unless we are careful I forsee that we shall be asked to do no more than discover to which antibiotic any infecting organism is sensitive: their vulnerability will be more important than their names. Indeed today their names are wanted only as a rough guide to treatment. Perhaps this is the right way to deal with non-specific infections—it was you who taught me the virtues of Eusol dressings—but it hurts my professional pride. I said that bacteriology was difficult: I meant useful bacteriology. Nothing is easier than to report that a specimen contains these and those organisms and nothing is harder than to persuade myself that I am not drawing a long train of stinking herrings across the paths of truth.

* * *

On this poetic note I will end my lamentations and add yet another apology for letting off so much steam (? hot air) and all because I hinted to your house-surgeon that he is an ignorant booby. He is that and all, and I know that you will exert yourself to correct his failings. If you will bring him in to laboratory tea on your next operating day perhaps I may be allowed to help ?

Yours very sincerely,

HARRY HAWKE.

Medicine and the Law

Mistakes with Anæsthetics

Two fatal mistakes in the dispensing of anæsthetics were recorded in September.

In the first [1] a girl of 19 was undergoing an operation for goitre. The surgeon ordered as a local anæsthetic an injection of a solution containing 6 grains of 'Novocain' in 7 ounces of normal saline to which adrenaline was to be added shortly before use. As he was dividing the tissues to expose the swelling in the thyroid, a fit developed and the patient collapsed; all attempts to revive her failed. The request for the anæsthetic had been communicated to the dispensary by telephone; the dispenser took a bottle of 'Nupercaine' instead of novocain; she explained at the inquest that she had no doubt that nupercaine had been asked for "because we frequently dispense it in saline, whereas novocain is usually dispensed in distilled water." The coroner, remarking that the mistake had been frankly admitted, said he felt that the similarity in the names of the drugs was unfortunate. They could easily be confused in an oral message unless enunciation was very clear.

'Nupercaine' is a proprietary name for cinchocaine (*B.P.*). Formerly 'Nupercaine' was issued as 'Percaine'; but this title was changed to avoid confusion with procaine.

In the second case [2] a local anæsthetic was being injected into the interspinal ligaments. The prescription did not specify the quantities of the adrenaline to be included with the 2% solution of novocain. It had apparently been expected that the strength of the solution would be 1 in 50,000. The actual strength was 1 in 1000. A consultant pathologist told the coroner that death was due to heart-failure. He had carried out considerable research to ascertain the toxic dose of adrenaline but had no definite results to give. It was possible that a nervous patient might secrete adrenaline in excess. The practitioner concerned said he had not specified the actual quantity on the prescription, as he thought it was a standard prescription.

In both cases a verdict of death by misadventure was recorded. Hospital managements will once more be reminded of the constant need of supervision, vigilance, and correct method.

1. *Leicester Mercury*, Sept. 8, 1953.
2. *Yorkshire Post*, Sept. 23, 1953.

In England Now

A Running Commentary by Peripatetic Correspondents

NOBODY has heard of Fumaretto di Bocca di Margra—certainly nobody at La Spezia in whose province we are; hardly anybody at Sarzana the local town; and even at Ameglia, the fairy-tale walled village perched on the top of a hill at the other side of the estuary, where Bocca di Margra is known as the bus terminus, only a few have heard of Fumaretto itself.

Our holiday party originally contained two people who spoke Italian. Since they left we have fallen back on French, which nobody here speaks, and School Certificate Latin plus scientific terms. The former rarely lets one down *Veni, Vidi, Vici*—good old Julius Cæsar; but *Gray's Anatomy* is less reliable. Dura Mater is now Cattivo Mama and all the anatomical fruits and nuts have let us down. Despite these tribulations we have compared all the price range of food in the two countries; but our final conclusion "What you gain on the swings you lose on the roundabouts" is only translatable into a rather complicated story about a man who was lazy on Wednesday and worked hard on Saturday. Recipes are easier, but English diet is quite inexplicable. If they don't eat pasta, can't afford wine, are not used to meat, and pay sixpence for an egg, what *do* they eat? Bread and jam—yes—rosbif—yes—but what else—tea—and well pouding. Yes we all know the English eat very little, they spoil their teeth and appetites with sweets and tea, but it must be a hard life without wine.

Our landlord—who has sailed the seven seas with a captain's ticket—was helpful about our language trouble, and lent me the *Master Mariner's Compendium*, published in Naples in 1901, which had a glossary of nautical terms in six languages, so that with care I could discuss the equivalents of dunnage, bill of lading, or harbour master. Unfortunately only the Italian part was alphabetical.

Everyone wanted to know what sort of doctors we were—a woman must surely be Specialiste, Ostettrica, or Pediatriche. We worked in the National Health Service, did we? A good thing surely for poor people—but what sort of job did we do? Psychiatrists—don't understand—oh—head doctors, yes we have heard of them but we don't need them here, you see we have good red wine. The joke resounds from the captain to the knife-grinder, and echoes down the valleys of olives: "The English would not need you if they had our good red wine."

* * *

The position of host at a wedding party is fraught with anxieties, not the least of which is a fearful foreboding that the hired coat, fancy waistcoat, sponge-bag trousers, and drab shell (grey top hat to you) will not arrive on time or that, when they do arrive, they will be found to fit only a David or a Goliath. All was well with mine, except the drab shell which had been built apparently to encase the cranium of a Goliath with hydrocephalus: it engulfed not merely the eyes but also the ears, and a last-minute exchange had to be effected. Another anxiety is whether the drink will hold out, for nothing is worse for the reputation than to have one's guests departing with dry lips and parched throats looking earnestly at their watches to see if it is opening time. Happily we had budgeted correctly and, as our delightful French friend remarked, everybody went home quite fed up and drunk. What more could one ask?

* * *

One of the teaching-hospital registrar's duties is to provide examination cases when his chief is invited to examine for the membership or other less-distinguished diplomas. Five days' notice is not too long to muster ten suitably gross yet mobile cases at any season of the year, but in August even the professional patient is on holiday, and the evening before the current exam I was two "light." With the usual dearth of physical signs in the wards, anything with a lump, limp, or wheeze was welcome. My not overcritical choice fell on a former house-physician who had returned to his alma mater with bronchial asthma brought on by devotion to duty elsewhere. He could walk and might confidently be

expected to wheeze. So next morning after breakfast off he went with the acromegalic lady, the tabetic gentleman, the fibroid lung, and the mitral stenotic with aortic incompetence and the cunningly kinked right carotid artery which simulates an aneurysm.

I have often had qualms about asking patients to come to examinations. I had an idea that the postcard accepting the invitation was sent back with bad grace after a great deal of grumbling, just to oblige the doctor. But now, having had a reliable spy in their midst, I know that I was wrong. All were glad to answer the call and felt that they had a duty to the "young gentlemen" (students take note) who wished to qualify; for if their diseases could not be cured they might at least make some use of their ailments in the service of society. Even the lady from the distant suburbs who had to leave home at 6 A.M. had no grumbles. The regulars greeted each other fondly and inquired after their acquaintances who had not received or had declined the call to duty. The new members of the troupe were coached in their subject and warned what to expect.

The highlights of my medical fifth-columnist's day were his meeting with his former chief, who recognised him and after a perplexed greeting retired to a respectable distance, and his encounter with a foreign candidate whose diagnostic methods were rather oblique: "Which hospital do you come from?" followed by "What is the name of the doctor who is treating you?" He also reported that each examiner steered the candidate towards his own specialty, the cardiologist harping on cardiac asthma, the allergist on pollen, and the neurologist on nothing in particular. The seven-and-sixpenny honorarium bought us each a glass of ale.

* * *

The Earles live in a cottage on the edge of my practice in the depths of the country and far from a bus route. I went out to vaccinate the twins. When I arrived the harassed but cheerful Mrs. Earle was striving to bottle-feed the twins simultaneously and also to keep an eye on her adventurous toddling daughter. I thought perhaps that it might be less disturbing for them if I vaccinated the twins while they were still feeding, and despite the toddler's well-intentioned efforts to help—it was one of those occasions when one would be glad of four hands and six eyes—we were getting on famously until the telephone rang.

Mrs. Earle being immobilised and there being no other adult in the cottage I left her in charge of the children and my small apparatus and hurried downstairs to answer the call. It was the kind health visitor ringing up to inform Mrs. Earle that the doctor would be calling this morning to vaccinate the twins.

* * *

One of our favourite relaxations from the strain of academic life is the study of the weekly statistics of infectious diseases. "Lot of measles about," we say, shaking our head knowingly; "bad year for dysentery too; these poor clinical chaps are having a bad summer." We click our tongue over the enteric figures, and speak in hushed tones of the decline in scarlet fever. Recently, however, a new emotion has been added; we have a quiet pride in the whooping-cough returns. Remember that sharp spike a couple of weeks back? That was us. Right above the maximum figures for the last ten years we went, just like that. As the spasm shakes us in the night, and we rush our asphyxiated stomach to the basin, it is a consolation to know that we have made history.

And not only that—we are learning a lot of clinical medicine too. Both the baker and the man who brings round the lemonade tell us we should go round by the gasworks every day—the smell of the gas always stops the vomiting. The butcher favours blowing into a bottle—it fixed up his partner's niece proper. But the fellow who really impressed us was the milkman. He knows somebody who got a prescription that took the cough away from their kids in no time. "All you do is ask the chemist for that stuff that tastes like onions," he told us, "you'll be right in a jiffy."

* * *

Saying of the Week.—I have no memory for faces, but a wonderful face for memories.

Letters to the Editor

CLINICAL PATTERN OF CHRONIC BRONCHITIS

SIR,—The paper by Dr. Oswald and others in your issue of Sept. 26 interested me greatly. I wonder if it would be possible for him, now that he has his team of investigators and questionnaire ready at hand, to carry out the same inquiry in that group of patients which he has discarded as "asthmatics." Then he could compare these results with his figures for "chronic bronchitis." He says—and I can well believe him—that "some difficulty was experienced in determining the common usage of the term 'chronic bronchitis' as opposed to 'asthma.'" Surely the distinction is not a valid one, though admittedly traditional.

His paper goes far to confirm me in my view that in fact these two terms designate merely the clinical extremes of a single pathological entity.

One visualises the same sort of relation between chronic bronchitis and cat asthma as exists between chronic eczema and, for example, acute primula dermatitis. Both are allergic reactions, and there is an unbroken clinical gradation between the two extremes. Secondary infection often complicates and aggravates the more chronic states in each; but infection is not the primary cause.

The survey brings out many points in which "chronic bronchitis" resembles the textbook features of asthma:

> A relatively high incidence of allergic disorders among the relatives; the frequent appearance of respiratory illness in childhood; "colds," presumably in most instances vasomotor rhinitis, which "go down to the chest"; mucoid sputum with prolonged and distressing morning cough; conspicuous bronchospasm and breathlessness; aggravation during winter months and by a number of respiratory irritants and allergens; and a high ultimate incidence of emphysema.

The presence of a very strong "bee in one's bonnet" almost precludes a detached and scientific approach to such a problem, at any rate from a statistical angle. Dr. Oswald's team would appear to be in an ideal position to tackle it, for he has already selected his asthmatics by exclusion and therefore without any bias in favour of a relation between the two conditions.

Plymouth. W. A. LISTER.

GROUP PRACTICE

SIR,—The two articles by Dr. J. S. Collings (July 4 and Sept. 19) present a most interesting and inspiring contribution to present-day thought on the development of general practice. I should like, however, to analyse some of Dr. Collings's proposals, to make some criticisms, and to add a few suggestions.

As I understand Dr. Collings's proposed scheme of basic group practice, it is essentially a partnership of up to five men working in common surgery premises for their mutual aid, both in consultation with one another and in order that they can help one another, during temporary absence, on a rota system; and that they may be in a position to have more ample and suitable accommodation for their work than is available to one man alone. Also that they may be able economically to employ a sufficiently ample staff of ancillary workers to relieve the more expensively trained doctor of a great deal of his routine work. This, it is suggested, will allow him to use his long training where it is really required.

Of course, all these are not new proposals. What is new is concrete suggestions for putting these proposals into effect and converting vague ideas into a practical working proposition.

Dr. Collings also puts forward, as a corner-stone of his scheme, a proposal for an appointment system of practice. I should like to discuss this latter proposal first.

Dr. Collings suggests a system of appointments of either 15 or 20 minutes. If a doctor sees patients at the surgery for a total of 20 hours a week (i.e., ten 2-hour sessions, six mornings and four evenings) he will, if all appointments are always filled, deal with 60–80 surgery consultations a week—about 3600 a year. For a list of 2500 patients, which is Dr. Collings's suggestion, the surgery attendances will be about 1·5 per patient per year. This is about half the actual urban figure at the present time. Dr. Collings suggests that the ratio of "nursing procedures" to doctor's attendances may be as high as 3 to 1, when the scheme is running—by which I presume he implies that on the average a patient will be seen by the doctor on only 1 of his visits in every 4. This would certainly make such an appointment system perfectly practicable, but I find it difficult to accept this ratio. One would like to know if Dr. Collings is assuming this figure or if he has seen it actually in operation in the urban industrial-class practice. He appears to visualise a practice in which several nurses are busy throughout the day dealing with "nursing procedures" for patients who were previously seen by the doctor during one of his comparatively brief consulting-hours and who will not need to see him again for several visits.

But this is pure phantasy. A brief analysis of the last 100 consecutive patients who attended at my surgery shows that I called on my nurse to help me with about 1 in 4, and in not more than 2 cases could she properly have dealt with the patient herself. All this does not mean to say that a good nurse in attendance cannot save a vast amount of the doctor's time; but, so far as my own practice is concerned, I cannot see any work for her for long periods of the day apart from the doctor's presence, which is apparently what Dr. Collings is suggesting. I should like his elucidation on this point.

In a description of an appointment system in a mixed general practice which was recently published, 5-minute appointments were attempted and, with some latitude, were found to be workable. With ample nursing assistance, I believe 6 minutes per consultation is possible and might be very successful. It does, however, rather scale down the type of leisurely, highly efficient practice suggested. There are, however, two other difficulties which suggest themselves to me. I think a proportion—perhaps a considerable one—of my patients would resent an appointment system. Many people do not like telephoning, which in any case is not free like the doctor, and they would certainly not come to the surgery to make an appointment. Nearly all "first consultations" would turn up without an appointment and would certainly resent being kept waiting while late arrivals came by appointment and were seen at once. The second difficulty is that this system requires attendance at the surgery of a receptionist or appointments clerk for a very large part of each day, and I feel that this would be difficult to arrange and very expensive. I have come to this conclusion with great regret as I should very much like to see such a system working in my own practice.

Apart from the appointment system, Dr. Collings's scheme is most attractive and is an extension and elaboration of arrangements which many partnerships have worked out for themselves. I feel the greatest stumbling-block, as in so many aspects of the health service, is that of finance. From my own experience, which covers, on a somewhat smaller scale, much of the proposed layout, I am in a position to speak with some confidence on this point. I agree with Dr. Collings that each partner should have a separate consulting-room so that they can all work at the same time. I also agree with him that a separate small examination room is required to each consulting-room, and preferably one or two over; 6 ft. by 6 ft. is large enough for these. They must be sound-proof, and for that reason I prefer them not to open direct from each consulting-room. I also prefer rather more waiting-room accommodation. Apart from these minor points, I am with him.

The cost of buying, converting, and equipping such a surgery is at least £1700 per doctor. It is only because the older type of dwelling-house in our larger towns is comparatively inexpensive to buy that the figure is not much higher. To build new premises is prohibitive as well as heart-breaking. One great point in favour of converting the older house is that living accommodation can be provided upstairs, in converted flats, for a housekeeper, and for an assistant's or locum's accommodation, and this solves many problems without adding materially to the cost. But this cost is nevertheless considerable, and I repeat I do not think one can count on less than an average of £1700 per partner—more for small groups and a little less for large ones. Dr. Collings does not mention the day-to-day cost of running such a surgery.

Rates, heat and light, telephone, repairs and maintenance, insurance, and cleaning may be estimated at about £200 per year per partner—again a little less for large groups and a little more for small ones. This is in addition to the annual cost of capital finance. If all the capital required can be borrowed, the annual interest and sinking fund over 20 years may perhaps add up to £130 per year per partner. It follows that the annual cost of running such a central surgery may be taken as upwards of £350 for each practitioner using it, before the employment of medical auxiliaries. I agree with Dr. Collings that the optimum number of these is one per partner. Presumably they will cost about £350 per year each. So we have now arrived at the figure of upwards of £700 a year "partnership expenses" for each member of the group. The main item under the heading of "partners' individual expenses" will be the car, which, with depreciation taken into account, will probably be at least £450. There will be further small personal expenses, and £50 should cover these. The total practice expenses are now in the neighbourhood of £1200 per partner. A list of 2500 patients will bring him in about £2500 gross, and there will be a little more for midwifery and some small private fees. My experience is that these additions, in urban industrial practice, are small and dwindling.

We find, therefore, that the man wishing to practise as his inclination and professional conscience guide him, must spend very nearly half his gross income to attain this end; and if, as I agree, 2500 is the maximum list he can properly attend even in the ideal circumstances of practice visualised, then his net income cannot be more than £1300 subject to income-tax. What springs to the mind is, of course, not original: the system of payment by counting heads is absurd—it simply puts a premium on the type of practice castigated by Dr. Collings in his original report and places a heavy tax on the competent and conscientious doctor.

At this stage can any useful suggestion be made regarding this? In my view it can. 30% of the gross pool is now regarded, for superannuation purposes, as "expenses of practice." I would suggest that where it can be shown, by accountant's figures, to the satisfaction of an appropriate committee that the proportion of expenses in any properly formed and conducted group is greater than the general average, on account of expenses incurred to the substantial gain of their patients, then they should receive an additional sum towards these expenses. This would, of course, reduce the general capitation fee per head. It would tend to subsidise efficiency and reduce lists to a reasonable size. No-one realises better than I do that this is a utopian suggestion, and I would like to make another, more likely to gain a substantial measure of support.

In my own partnership we have provided for ourselves surgery premises more or less on the lines indicated by Dr. Collings. For ancillary help we must perforce content ourselves with one part-time trained nurse. Other medical auxiliaries we must forego, but the central surgery forms the seed from which I feel all improvement in general practice grows. I do not agree that a group can function at all without premises to practise in. It is very likely to do increasingly good work if it is once formed and properly housed. The necessary capital outlay on housing may suffocate it at birth. The building societies do not cover quite this need.

If a central ad-hoc committee were to be set up authorised to advance from national funds the capital required by any

group who could satisfy a committee of the executive council and the local medical committee that their proposed scheme for surgeries was sound and efficient, then I feel such schemes would be widely put into effect and a great step forward to improving the status of general practice would have been taken. The central committee might be known as the Practice Accommodation and Group Committee. It might in many ways resemble the present Medical Practices Committee and be composed of general practitioners and lay members who should have among them a surveyor and a financial expert. The chairman should, I believe, be a doctor. The advances they would control might be loans up to say £2000 per partner, over a period of 20 years, at the same rate of interest as is paid on the compensation money—namely $2^{3}/_{4}\%$. After all, the Ministry have some £30 million of our money still in this fund.

The surgery would slowly become the actual property of the group, and a retiring partner could sell his share to a successor who could, in his turn, borrow from the fund.

The scheme should commend itself to the Ministry, since the capital cost of providing very suitable surgery accommodation throughout the country would be less than £1 per patient attended; and this is perhaps 10% of the cost of health centres, which, I agree with Dr. Collings, are quite unrealistic. This cost would be a repayable loan.

The annual charge to the partnership including some nursing help would be less than 2*s*. 6*d*. a year in respect of each patient on the list, and in the experience of those of us who have had the good fortune to practise from such a surgery no money has ever been better spent.

Having once got the surgery, the group will at any rate be able to use what ancillaries they can afford, and general improvement in practice will come step by step.

There is one more point. Many of the medical auxiliaries mentioned by Dr. Collings are, or should be, already provided for the patient, being paid by other branches of the health service. This applies to nurses, health visitors, physiotherapists, laboratory technicians, &c. It might be possible to obtain their part-time services at the group premises by proper coöperation in the health services where such groups are in full operation.

One can only reiterate Dr. Collings's plea for reorganisation of our work, by ourselves, for the mutual benefit of ourselves and our patients.

Croydon, Surrey. REGINALD N. DEANE.

*** Dr. Collings's proposals for the financing of group practices are set out in his third article which we hope to publish shortly—ED. L.

LABORATORY DIAGNOSIS OF SMALLPOX

SIR,—I feel that your annotation last week on the Ministry of Health brochure on this subject is a little misleading and to some extent dangerous. You state: "The emergence of reliable laboratory tests has reduced materially the period of doubt: instead of depending on protracted clinical observation in a smallpox hospital, he can do tests which rapidly and convincingly aid the diagnosis, often without moving the patient." Although in this paragraph "he" refers to the medical administrator, whoever that may be, the word clinician is used subsequently.

It must be recognised that "rapidly" is a relative term; a delay of two to three days is frequent, and in a number of instances laboratory tests may still leave the diagnosis in doubt. A real suspicion of smallpox *must* be treated as administrative smallpox, and in my opinion no specimen should ever be sent to a laboratory without the full knowledge of the local medical officer of health who is responsible for taking any action he considers necessary. Suspected smallpox must be treated as smallpox as far as vaccination of close contacts is concerned. At least one avoidable tragedy occurred in the recent outbreak in Yorkshire and Lancashire due to waiting for the laboratory report, a matter of three days, before the vaccination of known close contacts of a suspected case.

Grateful as we are to the virologists for their work in this field and the inestimable value of tests properly applied, we are already falling into the dangerous practice of dividing cases into "suspected" and "confirmed" and regarding the laboratory as the only method of confirmation. We must avoid in smallpox something similar to the "throat swab" obsession which has occurred in the diagnosis of diphtheria, where the practitioner would ignore even a "bull neck" while he waited to obtain a positive swab.

Department of Preventive Medicine and Public Health, University of Leeds. C. W. DIXON.

POLIOMYELITIS: WELSH REGIONAL BOARD AND MINISTRY OF HEALTH

SIR,—We have read with some dismay a document just circulated by the Welsh Regional Hospital Board to every consultant, asking them to ensure "that the arrangements for the admission and treatment of cases of poliomyelitis in their regions are up-to-date and efficient," and reporting a meeting several weeks ago of thirty-five physicians, otolaryngologists, and anæsthetists, together with representatives of the Welsh Board of Health, the Regional Hospital Board, and a number of coöpted members, which recommended that teams should be set up throughout Wales for the treatment of acute poliomyelitis comprising: a physician, E.N.T. surgeon anæsthetist, neurologist, and physiotherapist.

Throughout the whole of this lengthy document and its attached memoranda and reports, and throughout the whole of its recommendations, there is never one single mention of the orthopædic surgeon, who of course has the responsibility of looking after these patients for the rest of their lives and cannot do it well unless he starts from the beginning.

No orthopædic surgeon was invited to attend the conference. There was no proposal to include an orthopædic surgeon in any of the teams—only a physiotherapist who, bless her heart, would not get far among the otolaryngologists and anæsthetists who are to treat poliomyelitis. No view was sought from any orthopædic surgeon—there was only a report from Dr. Ritchie Russell's medical registrar.

Orthopædic surgeons, who are necessarily tolerant, have applauded the recent enthusiasm of some physicians and neurologists in the management of poliomyelitis, especially since the recent epidemic in Denmark which showed so high an incidence of bulbar palsy (though, let it be noted, a high incidence also of limb paralysis), even when recent observations and writings have sometimes tended to suggest that only physicians or neurologists are really capable of treating acute poliomyelitis.

But when enthusiasm becomes so fanatical that every consultant in one region of the Ministry of Health, and indeed in the whole of one country—Wales—is advised that no orthopædic surgeon need be consulted on the advisory committee, or appointed to any of the special teams, and that a physiotherapist will suffice to aid the neurologists, otolaryngologists, and anæsthetists in the treatment of poliomyelitis, it is time to remind ourselves that when this was last done—ten or twenty years ago—we had great disasters and many horrible deformities which could have been prevented but were relieved only after years of surgical treatment.

The British Orthopædic Association recognises at once the vital and imperative part that physicians, neurologists, and other specialists must play in the treatment of poliomyelitis in its acute stage. It knows, too, that the life-long treatment of patients with residual paralysis succeeds best when orthopædic management starts early. It asks only—and not for reasons of courtesy but only in the interests of good preventive treatment—that consultation and collaboration should begin from the beginning.

45, Lincoln's Inn Fields, London, W.C.2. REGINALD WATSON-JONES
President,
British Orthopædic Association

PAIN IN CHRONIC GASTRIC ULCER

SIR,—I would be glad to clarify some of the points raised by Professor Pickering in his letter of Sept. 19.

(1) He rightly states that I have postulated physical and chemical factors in inflammatory pain. He accepts the chemical but, for two reasons, rejects the physical. In my view, these factors, artificially separated for analysis, are in reality inseparable. They are interrelated, and react one upon the other. Thus, a more efficient and less congested circulation in the painful area involves not only an increase in velocity and volume of flow, and a decrease in pressure, but also a more rapid clearing from the interstitial fluids of the irritating products of inflammation. And vice versa, the chemical factors influence the physical—for example, by damaging capillary endothelium

(2) His first reason for rejecting tissue tension as a pain-factor is as follows. "I should hesitate to base a general principle on one experiment in one subject." But the evidence that tissue tension is a pain factor is based upon a multitude of experiments in a multitude of subjects. They include patients with painful inflammatory diseases in whom digital pressure, and dependency and elevation of the part influence the pain; patients who are given injections, by dentists and by medical practitioners, of therapeutic and local anæsthetic agents, and who note an initial pain caused by the prick of the needle, and a second more severe pain which accompanies the injection of the fluid, and which is more marked if the tissue is inflamed, or structurally less distensible. They include patients whose pain is relieved by incision of an abscess, or by trephining the nail over a hæmatoma, or the removal of a dental filling over an inflamed pulp. The experiments include every systolic throb of every throbbing pain.

(3) His second reason for rejecting tissue tension as a pain factor is that the quantity of tissue tension has not been measured. But, even in the absence of direct measurements, we can recognise changes. For example, that increased function causes increased blood-flow, even though we have no exact measurement of the increase in function; that lightning causes thunder, even though we have no measurement of the electrical discharge. Although I know of no technique whereby tissue tension can be directly and exactly measured, it bears a direct relation to the height of the part relative to heart level. And this can be measured and expressed in inches as a column of blood. This relative height bears a relationship to rate of healing, as well as to pain. Alterations in tissue tension are reflected also by the hardening and softening of the parts, and these can be appreciated by the clinical scientist, even in the absence of the instrumental methods of physical science.

(4) He doubts whether compression of nerve-fibres is the actual mechanism whereby a pricking or crushing injury causes pain. But the mechanism of the initial pain of pricking or crushing, and the doubts about it, are not relevant to the subject under discussion, which is pain due to inflammation.

(5) He asks, "But what events in the stomach and duodenum determine this almost predictable variation in tissue tension?" I have described these events elsewhere at some length, with diagrams and mathematical proof; but the idea is complex, and I fear that I have failed to express it adequately and clearly. The "almost predictable variation in tissue tension" is brought about (*a*) by the variations in pressure and flow of blood, which accompany the change from the resting to the active state, and then from the full to the emptying state, and (*b*) by variations in the postural tone or shape of the gastric walls. These hæmodynamic and postural changes are themselves brought about by the ingestion of food, its digestion and evacuation. But these changes are unequally distributed between the indurated ulcer mass and the more normal gastric wall, so that the principle of the Y-tube and other hæmodynamic factors are brought into play, and influence, not only the local circulation of blood, but also the physical and chemical state of the interstitial fluids, and these influence pain.

(6) He parts company with me here, because he finds that the matter is complex, and the evidence is "nebulous," or, as I would put it, incomplete. In his next paragraph he describes the "acid" hypothesis, and shows that the matter is complex, and the evidence incomplete. If then, a choice is to be made between the "inflammatory" and "acid" hypotheses, in each of which the matter is complex and the evidence incomplete, I would select the "inflammatory," because the inflammation is always present in adequate amounts, unlike the acid; and the inflammation has been shown to fluctuate directly with the pain periods, whereas the acid has been shown not to fluctuate directly with the pain periods, although it frequently fluctuates in the reverse manner, thus disproving the acid theory. As Knud Faber [1] and many others have pointed out, the acidity of the gastric contents becomes higher as the pain becomes less.

Finally, I would like to say that I appreciate the data on gastric function collected by Professor Pickering and the worth and thoroughness of his observations, even though I differ from him in their interpretation in regard to pain.

Sydney. V. J. KINSELLA.

PERIODIC MEDICAL OVERHAUL

SIR,—The point of view expressed by Sir Adolphe Abrahams (Sept. 26) seems to me to be based on an incomplete conception of the purpose of periodic medical overhauls, and I find his arguments unconvincing.

He considers, rightly, that the first function of periodic examination is the detection of early disease, but is surprised that it did not reveal two cases of very rapidly progressive malignant disease and that in a third case where it revealed multiple myelomatosis this could not be cured. There is a stage in every disease before which diagnosis is impossible, and he might as well have cited a case of smallpox appearing only a day or two after such an examination. Likewise, there are still many diseases that cannot be cured however early they are detected. But there are many other diseases that are silent in their onset yet nevertheless can be diagnosed, and many of them will benefit greatly if dealt with at that stage rather than left until proclaimed by symptoms.

Secondly, Sir Adolphe thinks that examination may form a basis for health education but doubts if the doctor is the best person to give it. In this respect it is personal individual health education, and who but the doctor can give it?

The purpose of the periodic medical overhaul can be considered under these two headings of detection of early disease and health education, but I see it from quite a different angle. Many diseases produce few if any symptoms in their early stages; or the symptoms may be wrongly attributed by the patient to age, fatigue, indigestion, overwork, under-exercise, or similar causes. One might cite diabetes, hypertension, obesity, tuberculosis, myxœdema—in fact go through any textbook of medicine and see how many descriptions of diseases start with "onset insidious." How many patients attribute early symptoms of malignant disease to piles or indigestion or bronchitis, because they are not encouraged to see the doctor early? How many women think backache is normal or suffer continual fatigue without knowing it is because of anæmia from constant menorrhagia? Flat feet, varicose veins, corns, and a hundred and one minor defects go untreated because they have been taken for granted for so many years. A person's real standard of fitness cannot be assessed accurately by how he thinks he feels.

From the point of view of health education, periodic examinations present a powerful weapon hardly as yet used. Preventive medicine must go further than making an environment perfect for the average man. People

1. Knud Faber, K. Gastritis and Its Consequences. Oxford, 1935.

vary widely, and what suits one may kill another. One very important function of periodic examinations is to help the individual to adjust himself to his environment and in a few cases to adjust the environment to the man. Again, bad habits of living such as over-eating, over-drinking, a bad mental approach to trouble, domestic discord, wearing unsuitable clothing, lack of hobbies, and many other matters can undermine health; and the guidance of a doctor can help to prevent the development of disease attributable to these causes.

It is, of course, wrong, as Sir Adolphe says, to place the emphasis on the possibility of disease instead of on health-mindedness, but a correctly conducted examination should place the emphasis on health and should do much to reassure the patient.

Reigate, Surrey. ERNEST H. CAPEL.

DOSAGE OF ANÆSTHETICS

SIR,—In his letter last week (p. 733) Dr. Galley appears surprised at having achieved anæsthesia for a panhysterectomy using only 8 ml. of 1 in 1500 solution of 'Nupercaine.' He further states: "I feel quite sure that few anæsthetists would stake money on achieving analgesia to this height with such small doses given to an average patient in the British Isles."

I would respectfully remind Dr. Galley that should he use the technique of spinal analgesia described by Mr. N. C. Lake,[1] he could obtain anæsthesia for upper abdominal surgery with only 9 ml. of 'Light Nupercaine' solution for average-sized patients. As regards mid-spinal analgesia, 5–7 ml., administered by a similar technique, gives anæsthesia up to the umbilicus.

Finally, where spinal anæsthesia is the method of choice, I use and recommend Lake's technique for high and mid spinal analgesia whenever possible.

Wembley Park, Middlesex. LOUIS CLEMENT.

ACROPARÆSTHESIÆ IN THE CARPAL-TUNNEL SYNDROME

SIR,—Dr. Kremer and his colleagues in their admirable article (Sept. 19) have amply confirmed Dr. M. J. McArdle's view that the main cause of the syndrome of acroparæsthesiæ is compression of the median nerve in the carpal tunnel. Thus the controversial issue as to whether the condition was primarily vascular or neural is neatly settled by incriminating a pressure ischæmia of the nerve.

That carpal-tunnel narrowing is not the complete explanation is accepted by the Middlesex Hospital workers, for they state that in many cases the tunnel will allow the passage of a raspatory. Further, not all cases of Russell Brain's syndrome suffer from the typical nocturnal attacks which characterise acroparæsthesiæ.

Excessive work with the hands, except in those cases with an anatomical abnormality at the wrist, appears to be an invariable ætiological factor. There remain, however, features which still require explanation—in particular, the age and sex distribution, which is so striking. Dr. Kremer suggests that water retention may be a factor in precipitating the condition in pregnancy and lactation.

I have been impressed that endocrinological disturbance usually played a part in this syndrome and have sought to explain this by fluid retention due to endocrine imbalance. It is interesting how frequently slight ankle œdema at night, swelling of the fingers on waking, and slight effusions into the synovial spaces occur in pregnant and menopausal women who suffer from this syndrome. Complete relief from the nocturnal attacks can frequently be obtained by treatment with salt restriction, ammonium chloride, and mersalyl. The fact that the acroparæsthesia syndrome is not a symptom of the common œdematous states of cardiac and renal disease would appear to dispose of this hypothesis. These conditions, however, impose physical limitations which prevent the overwork that seems essential in the causation of the syndrome. Fluid retention associated with endocrine imbalance may be the missing link in the pathogenesis of this interesting condition.

Newmarket General Hospital. R. ARDEN JONES.

1. *Lancet*, 1938, ii, 241.

EXERCISE TESTS DURING HEXAMETHONIUM TREATMENT

SIR,—Dr. Rønnov-Jessen in his interesting article last week drew attention to an unusual effect of exercise on the blood-pressure of patients under the influence of hexamethonium. Using this drug for the treatment of hypertension, we also have found patients in whom the blood-pressure falls on exercise. One of us (P. B. S. F.) described this effect in a paper read to the British Cardiac Society in May of this year, and a more detailed investigation on the variations of blood-pressure during exercise and their control by hexamethonium is in the press.

In our patients who showed a fall in blood-pressure on exercise, symptoms due to postural hypotension did not occur on walking if they were not present when the patients were standing still. These patients were unusual in that they could not "walk off their faintness," but their symptoms of hypotension were quickly relieved by lying down.

Charing Cross Hospital, London, W.C.2. P. B. S. FOWLER
A. GUZ.

TUBERCULOSIS

SIR,—Professor Francis (Sept. 26) justly takes me to task for assuming that the tubercle bacillus is ubiquitous and that tuberculosis cannot be conquered by physical eradication of the organism itself. He points to the success of the campaign to eradicate tuberculosis in cattle.

I am convinced. I agree that if we followed the same policy as in the case of cattle we could in time eradicate the tubercle bacillus from humans. This would mean that we would slaughter all human infective cases, segregate in sanatoria and concentration camps, &c., the 30-odd million of reactors, and isolate for six months all persons coming into this country by sea or air, submitting them to intradermal tuberculin tests and sending home or slaughtering the positive reactors. Professor Francis, I feel, however, would agree with me that such a policy would not be without its difficulties.

I agree with him most heartily when he implies that the campaign for the eradication of bovine tuberculosis in this country is proceeding so slowly that the great majority of people do not realise that anything is happening. This is only too true. He is mistaken, however, when he includes me amongst this great majority. In actual fact the knowledge has impinged upon my consciousness and I have referred to it in some detail elsewhere. This campaign for tubercle-free herds, dynastic rather than dynamic, has already meandered through four reigns, and at the present rate of progress will take another thirty-four years. In view of the fact that the United States succeeded in abolishing bovine tuberculosis in a period of twenty-three years and Denmark in sixteen years, one can only compare the pace of the British campaign to that of an elderly snail with arthrodesed joints. This excessively slow pace continues in spite of the brilliant work, enthusiasm, and energy of the veterinary profession, to whom the delay must be as exasperating as it is to public-health doctors.

Professor Francis accuses us of complacency because we accept the ubiquity of the tubercle bacillus in humans, and points to the results of chemotherapy and B.C.G. vaccination; but is he not confusing the eradication of tuberculosis with the eradication of the tubercle bacillus?

Many of the most eminent chest physicians in this country have recently expressed great uneasiness with regard to the results of treatment by the new antibiotics, and very many of them believe that the result of modern chemotherapy is to achieve a partial cure of the patient while failing in many cases to render him non-infective. The seriousness of such a state of affairs cannot be exaggerated.

As regards B.C.G. vaccination, surely Professor Francis would not seriously contend that it is a method of eradicating the tubercle bacillus! The persons to whom B.C.G. vaccination is given do not harbour any tubercle bacilli; on the contrary B.C.G. vaccination actually injects these organisms into their bodies in a living condition and therefore *increases* the incidence of the bacilli in the community.

Professor Francis begins his letter to you, Sir, by disputing that good housing and a good standard of living would eradicate the disease; but a couple of columns of his own letter have converted him somewhat, for he ends by admitting that "the rational application of hygienic methods will lead to the eventual eradication of tubercle bacilli from large sections of the population." Quite so!

Smethwick. HUGH PAUL.

SIR,—With diffidence I differ from Professor Francis. Undoubtedly the principle of eliminating all infectious—and all potentially infectious—animals from the herd has proved 100% successful in eradicating bovine tuberculosis. I would, however, underline Professor Francis's admission that "cattle can obviously be handled much more easily than men." Furthermore, though clinically and pathologically "tuberculosis in cattle resembles tuberculosis in man as closely as any other two diseases," it is questionable whether, from the epidemiological point of view, tuberculosis in cattle is equally comparable to the "white plague" in man. All the evidence suggests that, in all civilised communities in which it has been epidemic for centuries, tuberculosis—not unlike syphilis—is gradually changing in character. Generally speaking, it is no longer the deadly disease it used to be 50 or even 20 years ago. I believe it is generally accepted that whenever tubercle bacilli invade "virgin soil," the ravages of the disease are infinitely greater than in a population which, as a whole, has over many generations acquired a high level of immunity, and where in the course of time more and more of the most susceptible and defenceless strains have died out. This slow, but steady process of relative immunisation—always interfered with by major and prolonged disasters such as war—is essentially bound up with the ubiquity of the tubercle bacillus and has been bought at a high price. But whereas in 1947 the death-rate in this country was still over 50 per 100,000, it has since then sharply dropped to less than half that figure. I do not know how far we may regard ourselves as responsible for this statistical trend, which is not matched by a similar reduction of the incidence-rate. We can hardly tell how far better housing, improved food and living standards, our advanced methods of earlier diagnosis and more effective treatment, or epidemiological factors (such as the survival of the fittest after the elimination of the unfittest) or psychological and other factors not yet clearly recognised, have played, and are still playing, a part in this startling process.

But so far as our efforts to control the spread and the course of tuberculosis is concerned, this is a different proposition from trying to banish from our shores a virtually ubiquitous and mostly quite harmless germ. May I repeat a warning which Professor Selter of Königsberg sounded many years ago? He predicted that if it were possible to eradicate the tubercle bacillus from our population, we should sooner or later have to face the consequences of breeding a race completely defenceless against this infection. If Robert Koch's ideal could be fulfilled a time might come when the white population of Europe and America would be as easy a prey to the onslaught of tubercle bacilli as are the Eskimoes or the Negroes of Africa.

Meanwhile the life-long isolation of all infectious sufferers and possible carriers (even if we knew them all) is not a practical proposition, and we must be content with such "rational applications of hygienic methods," combined with suitable propaganda, as the means and personnel at our disposal allow. Nor is Ehrlich's *therapia magna sterilisans* in sight. So it does not look as if any known rational method of prevention will in any foreseeable future "lead to the eventual eradication of tubercle bacilli from large sections of the population."

Dubos and Dubos, in their excellent book quoted by Professor Francis, say:

> "It is certain that the disease will not be eradicated by vaccination, and it is likely that tuberculosis will remain a grave problem even in unvaccinated populations if economic difficulties and social disturbances continue to interfere with general well-being. But if peace returns and hope flourishes again in the hearts of men, tuberculosis will recede as it has always done, spontaneously (!), when life has become easier and happier. And then it will make little difference whether vaccination, or merely better food, brighter lodgings, cleaner environment and gladness of heart have been responsible for the control of tuberculosis."

Holywood Hall Hospital, Walsingham, co. Durham. E. G. W. HOFFSTAEDT.

PREMENSTRUAL TENSION

SIR,—Mr. Albert Davis (Sept. 26) is right. Premenstrual tension (or, as Dr. Dalton and I preferred to call it in the paper you were kind enough to notice, the premenstrual syndrome) is not uncommon. 30% to 40% of women have it in a mild form. In our paper we dealt only with severe cases, but with no special effort Dr. Dalton was able to collect 52 cases out of a panel of 5000 patients. Undoubtedly many more could be found by an intensive search.

But I cannot agree with Mr. Davis about progesterone. Has he tried it in adequate dosage? Very few patients are relieved by a dose smaller than 10 mg. a day for twelve days in each menstrual cycle, but if doses of this order are administered 90% are relieved. I have found this not only in the relatively small series which Dr. Dalton and I described, but in a much larger series of earlier cases omitted because my records were insufficiently detailed, and later cases treated since the paper was finished. On the contrary, ethisterone, even in a dosage of 50 mg. a day, relieves only 65%. The wording of Mr. Davis's second paragraph (in which he says that only about half the patients are relieved by progesterone) makes me wonder whether he "lumped together" the results of the two treatments.

In an experience of some hundreds of patients treated with ethisterone, I can only remember one who suffered from nausea. One is bound to agree that the occasional disruption of menstrual irregularity is tiresome. However, this rarely occurs when the treatment is by intramuscular progesterone or oral ethisterone. It is a real objection to treatment by progesterone implants, convenient though these are in many respects.

As we said in our paper, androgenic treatment is often successful, but in doses small enough to be safe from virilising effects it is less often successful than progesterone, and it has no advantages. I have not yet treated enough patients with methylandrostenediol to compare its effects with those of progesterone or methyl testosterone, but I suspect that they will be equal to those of the latter and therefore inferior, except in very large and expensive doses, to those of the former. It seems, too, slightly more reasonable to treat patients with a hormone natural to their sex, especially if, as both Mr. Davis and

I suspect, the cause of the bother is a relative deficiency of progesterone. Dr. Joan Malleson, in her interesting paper published in your issue of July 15, is also of the opinion that the premenstrual syndrome is due to an imbalance between the two ovarian hormones. Like Mr. Davis and myself, she has had success with both ethisterone and testosterone, though her dosage of the former was very low and of the latter perhaps somewhat high. In some cases she has had success by using an œstrogen in the immediately post-menstrual fortnight, an observation difficult to explain on the hypothesis which we have advanced.

London, W.1. RAYMOND GREENE.

PREVENTION OF POLIOMYELITIS

SIR,—It has been pointed out to me that in 1939 Burnet and Lush [1] found in Melbourne that there was no relation between susceptibility to clinical poliomyelitis and absence of antibody to herpes simplex, although in 1932 Weyer [2] had found in New York that there was such a relation. In view of the well-known local variability of viruses there is a case for reinvestigation; and I still feel that, as suggested in my letter last week, a natural-history survey of the virus diseases of poliomyelitis patients would be well worth while.

Beckley, Rye, Sussex. C. G. LEAROYD.

TUBERCULOUS MENINGITIS

SIR,—The article last week by Dr. Anderson and his colleagues and your leader prompt me to send a brief record of the following case.

A girl, aged 1 year 9 months, was admitted on June 11, 1949, with symptoms and signs of meningitis. Findings in the cerebrospinal fluid (C.S.F.) confirmed the diagnosis: tubercle bacilli were found on direct smear and by Löwenstein culture.

The patient was treated with streptomycin (50 mg. intrathecally daily for five weeks followed by the same dose on alternate days for three weeks). Intramuscular streptomycin 500 mg. daily was also given for four months

The patient was discharged on Dec. 30, 1949. The last specimen of C.S.F. contained 45 mg. protein per 100 ml., white blood-cells 40 per c.mm., and red blood-cells 543 per c.mm. For a year she attended the outpatient department, and her condition was very good.

On Oct. 19, 1951, almost two years later, she was readmitted with symptoms and signs of meningitis. It was then learned that she had been living with her grandmother, who had open pulmonary tuberculosis. C.S.F. contained 105 mg. protein per 100 ml., 22 mg. sugar per 100 ml., 674 mg. chlorides per 100 ml., and 42 cells per c.mm.; no tubercle bacilli were seen or cultured. Streptomycin (intramuscularly, daily for three months and intrathecally on alternate days for eight weeks) and *p*-aminosalicylic acid were given.

The patient was allowed to go home on March 3, 1952, after her temperature and general condition had been normal for over a month. C.S.F. on Feb. 25, 1952, contained 85 mg. protein per 100 ml. and 13 cells per c.mm.

She remained well for two months and then symptoms recurred. On readmission her C.S.F. showed signs of active disease, and tubercle bacilli were grown on Löwenstein medium. Isoniazid 100 mg. twice daily (and no other drug) was given by mouth until January, 1953 (incidentally, with no side-effects). The C.S.F. had almost returned to normal by Sept. 25, 1952 (protein 50, sugar 50, cells 5). During the next three months the C.S.F. became normal (protein 40, sugar 57, cells 4). She has attended the outpatient department since January this year, and when seen in August she was very well.

The following points are worth noting: (*a*) recurrence after nearly two years; (*b*) effectiveness of isoniazid; and (*c*) absence of side-effects after prolonged treatment with 200 mg. of this drug daily. It would be interesting to know more about the mechanism of the recurrence (reactivation of submeningeal foci or reinfection).

St. Alfege's Hospital, London, S.E.10. E. T. BASSADONE.

1. Burnet, F. M., Lush, D. *Lancet*, 1939, i, 629.
2. Weyer, E. R. *Proc. Soc. exp. Biol., N.Y.* 1932, **30**, 309.

PYREXIA IN THE PUERPERIUM

SIR,—I should like to offer the following comments on the instructive and timely paper by Dr. Calman and Dr. Gibson (Sept. 26).

The change in the definition of puerperal pyrexia as from Aug. 1, 1951 (made, no doubt, in all good faith to facilitate prompt isolation, investigation, and treatment of all infectious cases), had the immediate effect of trebling the number of cases notified each week in England and Wales. Our experience suggests that this increase is made up almost entirely of cases of urinary-tract infection, early mastitis (for the most part, simple engorgement of the breasts), respiratory infections, and transient reactionary pyrexias which would not have fulfilled the requirement contained in the old definition which demanded that the temperature of 100·4°F should be "maintained for 24 hours, or recur during that period." I cannot think that an arbitrary level of pyrexia can ever provide a satisfactory basis for notification; for example, in postabortum cases it is not uncommon to encounter low-grade infections, or even, on occasion, severe infections with spreading peritonitis, attributable to *Bacterium coli* and/or *Clostridium welchii*, in which the temperature, however prolonged, never reaches the level of 100°F. If the aim of notification is to ensure prompt isolation, investigation, and therapy, is it any more necessary to define what is meant by puerperal pyrexia than to define what is meant by food-poisoning or measles? A common-sense deduction based on numerous factors in history and clinical findings is the final arbiter in either case. If the aim of notification, on the other hand, is to detect cases of true genital-tract infection, then the sooner the present system is abandoned the better.

The bacteriological findings in the 141 cases of genital-tract infection analysed by Calman and Gibson are remarkable not so much for the complete absence of hæmolytic streptococci of Lancefield group A as for the high incidence of anaerobic streptococci. Routine anaerobic cultivation of all *cervical* swabs (I would emphasise the inadequacy of high vaginal swabs in seeking the true pathogen) and blood-cultures was instituted in the puerperal sepsis unit of this hospital by Prof. Robert Cruickshank late in 1936. Since that time the average yearly incidence of anaerobic (both sporing and non-sporing) organisms in postpartum puerperal sepsis has been 14·2% and the highest in any individual year 23·8%. On the other hand, in post-abortum puerperal sepsis the average yearly incidence of anaerobic organisms has been 35·4% and the highest in any individual year 57%.

Our experience has suggested that organisms found on *cervical* culture in cases of genital-tract infection can conveniently be divided into three groups:

(1) Those whose presence indicates active infection irrespective of the clinical findings. Hæmolytic streptococci of Lancefield group A are the chief example, but our experience with coagulase-producing staphylococci would demand their inclusion as well.

(2) Those which, though frequently harmless saprophytes, are always potential pathogens, requiring only suitable conditions for proliferation—e.g., traumatised tissue and necrotic retained products of conception. Hæmolytic streptococci of Lancefield groups other than A, *Bact. coli*, enterococci, and all anaerobic organisms are of this type.

(3) Those organisms which are never pathogenic. Coagulase-negative staphylococci and diphtheroids are the chief examples, and their finding is tantamount to a negative culture.

The present regrettable tendency to treat infections with antibiotics without carrying out the essential investigations is responsible for the large number of cases in which a satisfactory explanation of pyrexia is

never obtained. The increase in the number of available drugs and the rapidity with which organisms acquire resistance make it a matter of paramount importance that the infecting organism be identified, and its sensitivity reactions ascertained, if rational therapy is to be the rule.

I notice that Calman and Gibson do not refer to the chapter on puerperal infections in *Modern Trends in Obstetrics and Gynæcology*. This is probably the most comprehensive review of the subject in modern literature, and I think they might have found some useful information there.

Royal Free Hospital,
North Western Branch,
London, N.W.3. A. MELVIN RAMSAY.

SIR,—I have read with interest the article by Dr. Calman and Dr. Gibson but was surprised that no mention was made of a small gram-negative coccobacillus which I have found fairly frequently in vaginal swabs from both pathological and normal cases. Of the last 200 cultures from vaginal swabs taken at random, these organisms have grown in 20 instances (10%); most of these were from cases of puerperal pyrexia but some came from normal controls or cases of vaginal discharge in non-pregnant women.

These organisms are best seen on the blood-agar plates, after 48 hours' anaerobic culture, as minute pinpoint colonies resembling those of *Hæmophilus influenzæ*. With a hand lens they can usually be found also on the aerobic blood-agar plate. They can be subcultured from the original anaerobic plate, and will grow aerobically on blood-agar, chocolate-agar, or serum-agar but not on plain nutrient agar. The growth under anaerobic conditions is, however, always the more profuse. Dr. J. Bamforth, investigating these organisms some years ago, found they grew well on Dorset's egg medium. It is doubtful whether they are pathogenic, and as far as I am aware no-one has yet given them a name, though their obvious preference for anaerobic conditions has suggested that they are related to the fusiformis (necrophorus) group, and the name "pseudo-necrophorus" has been used; but they would seem to me to be more suitably placed in the parahæmophilus group.

I would be most interested to know how often Dr. Calman and Dr. Gibson found these organisms during their recent investigations, and what conclusions they reached about their origin and significance.

Department of Pathology,
Pembury Hospital, Kent. W. M. R. HENDERSON.

SURGICAL TREATMENT OF VARICOSE VEINS

SIR,—Various views have been expressed in your columns regarding the stripping of varices; and I entirely agree with Mr. Lang Stevenson (July 25), who states that this procedure will become the standard surgical treatment of the future. In most cases the entire saphenous vein can be removed through two small incisions in groin and ankle without any hæmorrhage. Unlike Dr. Leighton (Oct. 3), I prefer to remove the vein from below upwards, since this attenuates the branches joining the main trunk and minimises bleeding. The patients are able to walk within 24 hours and suffer far less discomfort than when sclerosants are used. With early exercise and a careful technique the risks of deep-vein thrombosis are negligible and end-results are highly satisfactory.

The stripping operation, however, does not absolve the surgeon from performing a careful resection of all tributaries at the sapheno-femoral junction. He must also at a later date be prepared to remove or inject any branches which have been missed by stripping.

A film which I made of this operation last year [1] demonstrates these points, and I am glad to see now that such wide support is being given to this procedure.

Those of us who operate on many cases every week must join with me in deprecating the "local ligation" technique, which makes subsequent stripping not only difficult but often impossible.

London, W.1. R. ROWDEN FOOTE.

EPIDEMIC VOMITING

SIR,—Interest in your annotation last week, together with the recent article by Watson,[2] prompts me to send this brief account.

During the past three months there have occurred in this practice some half-dozen *sporadic* cases of the type described. They have been characterised by the very sudden onset of vomiting without prodromal ill health; by the intensity of the vomiting, which lasted 12–48 hours; and by the abrupt cessation with no other after-effect than mild prostration for a day or two.

The following case appeared to belong to the same group, but had in addition definite signs of central nervous system involvement.

The patient, a 47-year-old potter's mould-maker, noticed some unsteadiness and a tendency to stumble on turning quickly to the left. This lasted for a week, and then, while at work, severe headache developed and he began to vomit. The vomiting continued with great severity for 48 hours and then ceased. The headache, which was especially severe over the left temporal region, lasted a few days longer. On the 2nd day of the vomiting he complained that his vision was blurred, and he was found to have complete right-sided hemianopia, with loss of pupil light reflex when the light was shone from the right. This lasted for 48 hours, and then he began to recover; recovery was complete at the end of a week. There were no other abnormal physical signs in the central nervous system.

These cases have coincided with an epidemic of infective hepatitis in children, and the question of the identity of the infecting virus in the two conditions occurred to me. In none of these cases, however, was there jaundice or palpable liver or spleen, and the blood pictures were quite different. I have assumed therefore that the two conditions were separate entities.

Kidsgrove, Staffordshire. D. G. FRENCH.

1. See *Lancet*, 1953, i, 858.
2. Watson, G. I. *Practitioner*, 1953, **171**, 302.

Public Health

Infectious Diseases in England and Wales

Disease	Week ended September 5	12	19	26*
Diphtheria	20	19	25	29
Dysentery	205	204	202	263
Encephalitis:				
Infective	4	2	3	5
Post-infectious	1	2	1	—
Food-poisoning	256	244	280	274
Measles, excluding rubella	802	603	608	492
Meningococcal infection	26	25	12	33
Ophthalmia neonatorum	27	41	27	28
Paratyphoid fever	11	11	8	13
Pneumonia, primary or influenzal	183	169	206	245
Poliomyelitis:				
Paralytic	123	92	123	119
Non-paralytic	101	81	104	99
Puerperal pyrexia	246	223	251	225
Scarlet fever	483	506	633	786
Smallpox	—	—	—	—
Typhoid fever	9	6	6	6
Whooping-cough	4058	3712	3558	2771

*Not including late returns.

Obituary

RALPH HENRY CROWLEY

M.D. Lond., F.R.C.P.

Dr. Ralph Crowley, whose death we announced last week, was one of the small team who in the first quarter of this century planned and created our school health service; and it was fortunate for the service that in these early years the post of senior medical officer at the Board of Education was occupied by someone with such a strong bias towards preventive medicine.

Crowley was born in 1869, the son of the late Alfred Crowley of Croydon. He was educated at Brighton Grammar School and St. Oliver's Mount School, Scarborough, and he studied medicine at St. Bartholomew's Hospital and in Berlin. After qualifying in 1893 he held house-appointments at Barts and at the Hospital for Sick Children, Great Ormond Street, before he joined the staff of the Bradford education authority as school medical officer. He was also appointed to the staff of the Bradford Royal Infirmary. Meanwhile he had taken his M.D. in 1895 and his M.R.C.P. three years later.

[Elliott and Fry

In 1909 he joined the staff of the Board of Education, about two years after the establishment of its medical branch. His colleagues were the late Sir George Newman, the late Dr. Alfred Eichholz, and Dr. (now Dame) Janet Campbell. Before the 1907 Education (Administrative Provisions) Act, which placed a duty on local education authorities to provide for the medical inspection of children at school, a few of the more important and progressive authorities, such as Bradford, had appointed school medical officers, but for most the idea of a medical service allied to the educational service was new. Crowley's clinical experience and knowledge was invaluable to his colleagues at the board, for he was able to clothe the bones of administration, which in those early days was the main preoccupation of the medical branch, with living tissue. Sir George Newman was appointed chief medical officer of the Ministry of Health and Board of Education in 1919, and in 1925 Crowley became his senior medical officer in charge of the medical staff of the Board of Education.

Always open to new ideas, Crowley did much to stimulate investigation and research both by doctors in his own department and by school medical officers working in the field. Investigations into the eyesight of children, anthropometric standards, and the assessment of physical efficiency were some of the inquiries initiated by him and carried out by his own medical officers in collaboration with those of local education authorities. Of the many committees with which he was associated during his official career perhaps the most important was the Interdepartmental Committee on Mental Deficiency set up in 1924 by the Board of Control and the Board of Education. Dame Ellen Pinsent at the former board and Crowley at the latter were the chief sponsors of this committee and of the five years' investigation it undertook. Crowley had been uneasy in his mind for years about the certification as "mental defectives" under the Education Act of 1914 of large numbers of children who were merely backward educationally. The committee did not need much suasion to recommend that this certification should be restricted to children whose mental condition or behaviour rendered them suitable to be dealt with under the Mental Deficiency Acts, but it was Crowley's forceful advocacy that made doctors, teachers, and members of the general public realise the importance of this recommendation. He was also chairman of the Committee of Inquiry into Problems relating to Partially-sighted Children, which issued its report shortly before his retirement in 1934.

J. E. U., one of his colleagues at the Board of Education, writes:

"His vitality and enthusiasm, tempered by a keen sense of what was practicable, made him an inspired adviser on the development of the school medical services and on the education and well-being of children handicapped by physical and mental disabilities. His sound educational philosophy enabled him to appreciate the interdependence of medical and educational issues, and assured him a sympathetic consideration of his views from his educational colleagues. Teachers felt encouraged and stimulated after his visit to a special school. Even backward authorities and obdurate directors of education were overcome by his transparent sincerity and persuasive power. He had an intense concern for the mental as well as the physical well-being of children. Child guidance and the psychological problems of the child suffering from mental ill health made a particular appeal to him. In 1926 he visited the United States to learn at first hand what was being done there for the mental welfare of school-children. He returned deeply impressed with the ideals which lay behind the child-guidance service, and its great possibilities for good. He at once saw the medical-educational implications of this comparatively new service and threw his accustomed energy and enthusiasm into stimulating local education authorities and voluntary bodies to establish new child-guidance clinics or to extend existing arrangements. He probably did more than anyone to encourage the inclusion of a child-guidance service in the educational programmes of this country. Those of us who worked with Crowley will remember him as an inspiring leader and a man imbued with the deepest sense of humanity and idealism."

"Many, as I am," writes E. O. L., "are indebted to Crowley for opening their eyes to the importance and wide scope of social medicine.

"He maintained that the doctor cannot fulfil his more specific function of treating bodily diseases, if he is indifferent to the patient's environmental conditions and his mental and moral welfare. Adopting this standpoint, it was not surprising that Crowley became one of the pioneers of the garden cities at Letchworth and Welwyn. He was a man dominated by a passion to serve his fellow men. He was a Quaker—first, last, and at all times, in all things, and in all circumstances. His was the most consistent personality I have known. There was no discrepancy between his ideals and his acts. He would have none of the casuistry of such maxims as 'the end justifies the means.' Wittingly or unwittingly he was a Kantian—'ought' implies 'can,' and if the end sought is right, Crowley maintained that it can and must be achieved by right means.

"He was a man with infectious enthusiasm, and in this he remained almost boyish to the end. A stranger might receive the impression—a completely wrong one—that he was a man of impulse with evanescent emotions. He would not give rein to his enthusiasm until he had considered carefully and critically any cause he championed. He was a great lover of Nature, and when he was moved by some fine scenery his enthusiasm became ecstasy. One of my most treasured memories is a long fine summer evening we spent together in the gardens adjacent to the Portmeirion Hotel in North Wales. His knowledge of flowers, shrubs, and trees was encyclopædic; but what made the deepest impression upon me was his delight, almost childlike in its spontaneity. It was fitting that Crowley, when he set aside the heavy responsibilities of his post, should retire to his garden. It is hoped that he has left us some record of his reflections in this garden during the last fifteen years."

Dr. Crowley married, in 1902, Miss Muriel Priestman of Bradford, and there are two daughters of the marriage.

THOMAS ARCHIBALD MALLOCH

M.D. McGill, F.R.C.P.

Archibald Malloch, librarian of the New York Academy of Medicine, will be remembered by many colleagues in this country who knew him during the years he spent in Oxford and London, as one of the editors of the annotated catalogue of Osler's library.

He was born in 1887 at Hamilton, Ontario, one of the three sons of Dr. A. E. Malloch, who was one of Lister's house-surgeons at Glasgow and a life-long friend of Sir William Osler. Qualifying at McGill in 1913, he served with distinction at Depage's Belgian war hospital and later at the No. 3 Canadian Hospital in France

during the first world war; he took the M.R.C.P. Lond. in 1919.

His interests lay more in the scholarship than the practice of medicine, and his first essay in medical history, written at Osler's instigation, was the delightful book *Finch and Baines, a Seventeenth Century Friendship*, beautifully produced by the Cambridge Press in 1917, while he was serving in France. His appointment in 1925 as librarian of the New York Academy of Medicine was fortunate for himself and for the academy. He promoted the growth and activity of his department till it has become one of the largest and most up-to-date medical libraries in the world; at the same time he made its great resources readily accessible to all serious workers. He took an active part in the affairs of the library profession, and did not neglect the historical studies which were so near his heart. His writings were not frequent, but they display his personal charm, while the famous rare-book collection at the New York academy owes much to his guidance. In 1930 he was elected to the fellowship of the Royal College of Physicians of London, and in 1939 he was appointed FitzPatrick lecturer. The outbreak of war and his own ill health prevented him from delivering the lectures, but they were published by the college in 1946. They are a learned and entertaining survey of *Medical Interchange between the British Isles and America before 1801*.

He retired from his librarianship in 1949 after a coronary thrombosis. He died on Sept. 19 at White Plains, New York.

HUGH HERCUS CAVENDISH FULLER
M.D. Edin.

Dr. H. H. Cavendish Fuller, chief medical officer to the Railway Executive, died at the age of 66 in St. Mary's Hospital on Sept. 30.

He was educated at Bishop's Stortford College and at Edinburgh University, where he graduated M.B. in 1912. On the outbreak of war in 1914 he was attached to the Royal West Kent Regiment and he served in France with the rank of captain. In 1916 he was invalided home and later he was appointed officer-in-charge of the Princess Marie Louise Military Hospital at Bermondsey.

On his return to civilian life in 1917 he became medical officer of Malvern College and later he also practised privately in Malvern. He was also honorary consulting surgeon to the Great Malvern Hospital and medical referee to the Ministry of Pensions for the Malvern area.

In 1930 he became assistant medical officer to the Great Western Railway at its Paddington headquarters, and he was promoted to chief medical officer two years later. During the late war he was in medical charge of first-aid at Paddington, and he was also medical officer to the Great Western Railway zone, to the 38th battalion of the Home Guard, and to the Kensington Sea Cadets. He was vice-president of the Union Internationale des Services Médicaux des Chemins de Fer. Besides his railway work he held the appointment of medical officer to the Channel Islands Airways, chief clinical assistant at the National Hospital for Diseases of the Heart, and clinical assistant at the British Red Cross Clinic for Rheumatism, Peto Place.

C. T. N. writes: "Those who worked with Dr. Cavendish Fuller came to admire his kindness, tact, and honesty of purpose. By his services to railway medicine he has shown the way to many advances. During his long illness he showed fortitude and courage, and concern for the feelings of others. His loss will be deeply felt throughout the British Railways, the administrations of foreign railways, and his broad circle of friends."

During his life as general practitioner, school medical officer, and in industrial medicine, Cavendish Fuller made many contacts and crowds of friends outside his specialty. One of them, A. D. W., writes:

"Cavendish Fuller's desire to solve problems in an amicable way sometimes gave the impression that he was timid; but his solution was generally the best one possible and by quiet methods he generally secured his end. His good humour and his kindness of heart were unfailing, and no trouble and no distance would stop him from making a good-natured gesture to a friend in trouble. To the end he spared the feelings of those around him. No trace of querulousness or awkward question revealed itself, so that one came to think that perhaps the seriousness of his illness had been concealed from him. The discovery of an entry in his diary many months before showed that it was he, and not his advisers, who was successfully playing a part."

Dr. Cavendish Fuller married Miss Janet Gibson in 1917, and she survives him with one daughter.

WINIFRED LINTON
S.R.N., Hon. F.C.S.P.

Miss Linton, head of the department for remedial exercises at the Brompton Hospital for Diseases of the Chest, died on Sept. 7. She was trained as a nurse at St. Bartholomew's Hospital, and served with the Army in the Dardanelles in the first world war. After her return home she took up physiotherapy, and began her work at the Brompton Hospital, first with J. E. H. Roberts and later with Tudor Edwards.

G. M. writes: "Miss Linton was the most modest and self-regardless of women; but she was a genius. If the disability of a patient were explained to her, she would devise exercises and postural procedures which would reduce the disability to a minimum, and she would gain the confidence and eager coöperation of patients of all ages and of every rank of society. She trained many other physiotherapists, and her pupils have become heads of departments in hospitals here and abroad. She was a woman of small stature and of no special distinction in appearance; but her zest and her complete devotion to the relief of her patient carried instant conviction and made her respected and beloved. She had a delicious sense of humour and she was a dear."

Appointments

BALLANTYNE, J. CHALMERS, F.R.C.S., D.L.O.: asst. director (consultant), audiology unit, Royal National Throat, Nose, and Ear Hospital, London.
CAIRNS, R. O., M.B. Edin., D.P.H.: medical superintendent for medical administration of Glasgow children's hospitals.
CARRICK, G. S., M.B. Glasg., D.P.H.: M.O.H. and port M.O., Greenock.
GILMOUR, I. E. W., M.B. Edin., F.R.C.S.E.: asst. surgeon, Kirkcaldy General Hospital.
PLEWS, W. R., L.R.C.P.E., D.P.H.: deputy M.O.H. and deputy port M.O., Greenock.
ROBERTSON, D. E., M.B. St. And., F.R.C.S.E.: asst. orthopædic surgeon, Peel Hospital, Galashiels, Selkirkshire.
SMITH, K. C. P., M.R.C.S., D.P.M.: part-time psychiatrist, child-guidance service, Gloucestershire County Council.
TANNER, N. C., M.B. Brist., F.R.C.S.: part-time consultant surgeon, Charing Cross Hospital, London.

Colonial Service:

ALSTAD, K. S., M.D. Glasg., M.R.C.P.E., D.P.H.: physician-specialist, Federation of Malaya.
DOS SANTOS, W. A., M.B. Camb., D.Bact.: pathologist, Grade A, Trinidad and Tobago.
GRECH, J. F., M.D.: M.O., Nigeria.
GRECH, PAUL, M.D. Malta: M.O., Tanganyika.
JACKSON, J. H., M.B. Durh.: M.O., Tanganyika.
MITRA, A. K., M.B. Calcutta, D.P.H., D.T.M. & H.: asst. M.O.H., Aden.
PENKALA, H. J., M.B. St. And.: M.O., Somaliland Protectorate.
PODLEWSKI, HENRYK, M.B. Polish School of Medicine: asst. M.O., Bahamas.
STRISIVER, E. V., M.D. Berlin, F.R.C.S.E.: specialist, Sierra Leone.

Appointed Factory Doctors:

BALDWIN, J. T., M.B. Edin.: appointed factory doctor, Penicuik, Midlothian.
SCHOFIELD, JOHN, M.D. Manc.: appointed factory doctor, Fleetwood, Lancashire.
YATES, NORA, M.B. Glasg.: appointed factory doctor, Glasgow South, Lanarkshire.

South-Western Regional Hospital Board:

ANYAEGBUNAM, P. A. O., M.B. N.U.I., D.L.O.: E.N.T. registrar, South Devon and East Cornwall Hospital, Plymouth.
FREEMAN, A. C., M.A., M.D. Camb., M.R.C.P.: senior registrar in general medicine, Exeter clinical area.
MALLICK, SUSHIL, B.SC., L.R.C.P.E., D.OBST.: registrar in obstetrics and gynæcology, Gloucestershire Royal Hospital, Gloucester.

Births, Marriages, and Deaths

BIRTHS

ANDERSON.—On Sept. 28, at Aylesbury, to Audrey, wife of Dr. J. L. Anderson—a daughter.
REED.—On Sept. 27, to Ralph and Freda Reed (née Mackover), M.B., at University College Hospital—a daughter (Lucinda Mary).
RODDIE.—On Sept. 24, at Johnstone House, Royal Maternity Hospital, Belfast, to Alix P. M. Roddie, M.B. (née Hurst), wife of T. Wilson Roddie, M.B., M.R.C.O.G.—a daughter.
STELL.—On Oct. 2, to Eleanor Davies-Jones, M.B., D.A., wife of John Laidman Stell—a second daughter (Victoria Laidman).

Notes and News

MEDICAL FILMS AT INTERNATIONAL CONGRESS

DURING the 7th International Congress of Scientific Films held this year in London, 73 medical films from nineteen nations were shown. Practically every aspect of medicine was represented, but the emphasis seemed to be on the use of film in health education and the popularisation of medical themes in different parts of the world. Films of this type included the production and investigation of antibiotics (Belgium), an appeal for blood-donors (Denmark), dental hygiene (Great Britain), nutrition (Italy), the prevention of round-worm infection (Japan), the importance of vaccination (Nigeria), sex education (Sweden), anti-tetanus inoculation (Uruguay), the work of a local midwife in Georgia (U.S.A.), and recent advances (U.S.S.R.). Though these films were made for public distribution in their own countries, many of them were judged unsuitable for public exhibition in Great Britain.

Of the specialised films *Manganism* (Morocco) deserves special mention, not only because this industrial disease is so rarely seen in this country, but because of the quality of the exposition and photography. Dr. H. Rohracher had brought from Austria a series of interesting psychological studies, including a fascinating comparison of adult uniovular and binovular twins filmed together while they performed similar tasks such as going up steps and shaving, and experienced similar emotions as when watching a film of an eye operation. From Switzerland came a survey film on the use of *p*-aminosalicylic acid in the treatment of tuberculosis, and from Germany a study of infants feeding at the breast, from a bottle, and with a spoon. Prof. J. Calabek had brought from Czechoslovakia his detailed demonstration of ether anæsthesia, and from France came a very complete study of rheumatism. Dr. J. Nauta (Netherlands) showed some excellent examples of cineradiology as did Britain's own pioneer in this field, Dr. Russell Reynolds. From France also, Prof. A. Policard showed his new time-lapse phase-contrast cinemicrography film on pneumoconioses, and Dr. M. Bessis sent some electron-microscope shots of normal and pathological red blood-cells.

It would seem that the enthusiasm for filming operations is on the decline, for few were submitted to this year's congress. Of the dozen medical-film programmes arranged, only two contained films of surgical operations. In such films the interpolation of diagrams during the operation, as in films from Italy and the Netherlands, makes them more useful than those which are simply visual records of operations —such as a film on a cholecystectomy, which was not improved by the addition of the third dimension. Great Britain was, perhaps, more ruthless than some in selecting films to be submitted to the congress, with the result that the films shown were of a very high standard. Special mention should be made of *The Prevention of Cross-Infection—Airborne Infection* (Ministry of Health), *The Human Blood Fluke* (Wellcome Film Unit), and *Venepuncture* and *Marrow Puncture* (I.C.I. Film Unit). A few examples of the scientific films seen during the congress were shown on a B.B.C. television programme. Of the ten films included, four were medical —an interesting reflection on the high quality of the medical films.

NEW CHESHIRE RADIOLOGY DEPARTMENT

ON Oct. 2 Dr. Peter Kerley, president of the Faculty of Radiologists, opened a new and enlarged radiological department at Clatterbridge Hospital, Bebington.

The new unit is self-contained but has been planned to give good circulation from the wards and direct access to the adjoining operating-theatre suite. There are three X-ray rooms: the general room has a 4-valve high-power unit for general and fluoroscopic work, and a cranial radiography apparatus; the fluoroscopic room has a 4-valve high-power unit for gastro-intestinal, chest, and heart examinations; and the genito-urinary room has a 4-valve high-power unit with urological table. Electrically operated pass hatches give access from each of the X-ray rooms to the central darkroom, and a drying-room gives alternative darkroom circulation from one of the X-ray rooms.

The consultant staff of the department are Dr. R. J. Keating, Dr. J. P. McLaughlin, and Dr. A. G. McCarey.

University of Durham

Mr. A. G. R. Lowdon has been appointed to the chair of surgery in the Newcastle division (medical school) of the university. He will also hold the post of surgeon at the Royal Victoria Infirmary, Newcastle upon Tyne.

Mr. Lowdon is a graduate in arts and medicine of Edinburgh University. He took his M.B. with honours in 1936 when he was the Ettles scholar of his year. He was also awarded a Vans Dunlop scholarship in surgery and pathology. He was a senior president of the Royal Medical Society. After holding house-appointments at the Edinburgh Royal Infirmary and the Royal Hospital for Sick Children, he took the F.R.C.S.E. in 1939. On the outbreak of war he joined the R.A.M.C. with a territorial commission. Later with the rank of lieut.-colonel he was in charge of the surgical side of a hospital in France, and in the *Edinburgh Medical Journal* he described a series of abdominal wounds treated by laparotomy. On his return to civilian life he was appointed assistant surgeon to the Edinburgh Royal Infirmary and lecturer in surgery to the university. He has lately published in our columns papers on the treatment of acute perforated peptic ulcer by partial gastrectomy, and on the deflation of the distended bowel at operation.

Royal College of Surgeons of England

Sir Ernest Finch will deliver the Thomas Vicary lecture at 5 P.M. on Thursday, Oct. 29, at the college, Lincoln's Inn Fields, London, W.C.2. The title of his lecture is The Forerunner.

Royal College of Physicians of Ireland

The following were successful in the D.P.M. examination held in September:

L. I. Shenken, R. E. Jenkins, T. H. Bewley, H. M. Flanagan, D. D. Ellis, J. A. Kelleher.

Courses for General Practitioners at Cambridge

During 1953–54 a series of one-day symposia for general practitioners will be held on Saturdays at Addenbrooke's Hospital, Cambridge. Each symposium will consist of three to five lecture-discussions and demonstrations of clinical cases or modern methods.

The following programme has been arranged: tuberculosis and other diseases of the chest (Oct. 24); disorders of the blood (Nov. 14); dermatology (Dec. 12); obstetrics and gynæcology (Jan. 9); infectious diseases (Feb. 6); cardiovascular diseases (March 6); orthopædics, treatment of injuries, and physical medicine (April 3); cancer (May 1); pædiatrics (May 29); nervous diseases (June 26); diseases of the ear, nose, and throat, diseases of the eye (July 24). Further information may be obtained from the secretary of the Medical School, Tennis Court Road, Cambridge.

Medical Society for the Care of the Elderly

A meeting of this society will be held on Thursday and Friday, Oct. 22 and 23, at the City Hospital, Nottingham. Further particulars may be had from the secretary, Dr. H. P. Jameson, 150, Harley Street, London, W.1.

National Marriage Guidance Council

Dr. Noel Harris is to give the Gillies lecture at the rooms of the Royal Society, Burlington House, Piccadilly, London, W.1, at 6 P.M. on Wednesday, Oct. 28. The title of his address is Ourselves as Others See Us.

London Medical Exhibition

Lord Horder will open this exhibition at the new hall of the Royal Horticultural Society, Greycoat Street, S.W.1, on Nov. 16 at 11.30 A.M. The exhibition will be open daily from 11 A.M. to 6.30 P.M. till Nov. 20.

Middlesex Hospital Medical School

At this school's annual dinner on Oct. 2, Mr. C. P. Wilson, the chairman, was able to give a favourable account of the past year. The Queen has bestowed her patronage on the hospital, thus sustaining a tradition that has been uninterrupted for more than a hundred and thirty years. The Middlesex has won the inter-hospitals competition for the best-kept garden; the nurses have won the inter-hospitals tennis cup for the third year running (this is the second time that they have won it outright); and the students have won the inter-hospitals cricket cup. The Chairman spoke with awe of the high standard of the students' work and looked forward to the time when they would hold a refresher course for consultants. The Chairman was proposing The Hospital and Medical School; and Sir Harold Boldero, the dean, and Dr. C. G. H. Newman (senior Broderip scholar) responded. Sir Harold referred with pleasure to the new Institute of Clinical Research. The board of governors decided that they would willingly spend much of the endowment fund on research; and a house to the north of the hospital was purchased, to accommodate the institute, which would be under the directorship of Prof. Alan Kekwick. Finally, Prof. B. W. Windeyer proposed The Chairman.

Nuffield Gerontological Research Fellowships

The Foundation has awarded a professorial research fellowship in gerontology to Dr. P. L. Krohn, reader in endocrinology in the University of Birmingham, and a fellowship of less senior status to Mr. D. A. Hall, PH.D., lecturer in medical biochemistry in the University of Leeds.

Society of Chemical Industry

At a meeting of the microbiology group to be held on Thursday, Oct. 15, at 6.15 P.M. at 11, Chandos Street, London, W.1, Mr. E. F. Gale, SC.D., will speak on Actions of Antibiotics in the Bacterial Cell.

West End Hospital for Nervous Diseases

Clinical demonstrations will be given on Tuesdays at 5.30 P.M. from Oct. 13 to Dec. 15, in the outpatient department of this hospital (40, Marylebone Lane, W.1). All demonstrations are free, and are open to doctors and senior medical students.

National Association for Mental Health

This association is holding an inter-clinic conference for professional members of child-guidance staffs, on Nov. 21, at the Y.W.C.A., Great Russell Street, London, W.C.1. Further details can be had from the conference secretary of the association, 39, Queen Anne Street, W.1.

Link between General Practitioner and Hospital

The *News Chronicle* (Oct. 5) reports that at the General Hospital, Birmingham, general practitioners are to be welcomed in the wards on Tuesdays and Fridays by the registrars, house-officers, and ward-sisters. They will be shown the case-notes of patients they recommended for admission, and told about treatment and progress.

College of General Practitioners

The first annual general meeting of the college is to be held on Nov. 14. Foundation membership will close at the meeting. Further particulars may be had from the hon. secretary of the college, 14, Black Friars Lane, Queen Victoria Street, London, E.C.4.

CORRIGENDA: *Postprandial Attacks of Palpitation and Weakness after Gastric Operation.*—In this article by Dr. W. Hamilton Smith and his colleagues (Sept. 12), the words " and the cells " were wrongly included at the end of the first paragraph in the second column on p. 533.

Legal Responsibility in Blood-transfusion—The penultimate paragraph of Dr. J. D. James's letter last week should end: " . . . the chief problem in transfusion work is to avoid producing reactions in *recipients* who have ' reagins ' in their plasma."

Sir Harry Platt is leaving on Oct. 24 for a two-week lecture-tour in Cyprus and Israel under the ægis of the British Council.

A party of fellows of the Royal Society of Medicine has just returned from a lecture tour in Northern Italy where they were the guests of the Lombardy region of the Italian Red Cross. The party consisted of Sir Gordon Gordon-Taylor, Sir Clement Price Thomas, Mr. and Mrs. L. R. Broster, Prof. and Mrs. L. J. Witts, Dr. Hugh M. Sinclair, and Mr. R. T. Hewitt, the secretary of the society.

The Association of British Chemica Manufacturers has issued a booklet *Marking Containers* which outlines a system of warning labels for hazardous chemicals. This applies primarily to chemicals in quantities exceeding 6 pints for liquids and 8 lb. for solids, up to the time when the container is opened for use. Copies of the booklet, 7*s.* 6*d.* each, are obtainable from the association, 166, Piccadilly, London, W.1.

Diary of the Week

OCT. 11 TO 17

Sunday, 11th

LONDON JEWISH HOSPITAL MEDICAL SOCIETY
3 P.M. (Woburn House, Upper Woburn Place, W.C.1.) Mr. Albert Davis: Obstetric and Gynæcological Curiosities. (Presidential address.)

Monday, 12th

UNIVERSITY OF LONDON
5.30 P.M. (University College Hospital Medical School, University Street, W.C.1.) Prof. E. G. D. Murray (McGill): A Surmise on Some Trends in Bacteriology.
POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. W. S. C. Copeman: Treatment of Rheumatic Diseases with Cortisone and A.C.T.H.
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M. (Chelsea Hospital for Women, Dovehouse Street, S.W.3.) Mr. R. H. Boyd: Contraception.
MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Mr. E. W. Riches: Significance of Hæmaturia. (Presidential address.)

Tuesday, 13th

COLLEGE OF GENERAL PRACTITIONERS
5.45 P.M. (14, Black Friars Lane, E.C.4.) Dr. G. F. Abercrombie: Family Doctor-Patient Relationship.
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Prof. R. W. Russell, PH.D.: Experimental Psychopathology.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Section of Psychiatry.* Dr. E. B. Strauss: Moral Responsibility and the Law. (Presidential address.)
KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.5
5 P.M. Prof. E. C. Dodds, F.R.S.: Endocrine Background of Malignant Disease. (Dorothy Platt lecture.)
INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. C. O. Carter: Genetics in Dermatology.
CHELSEA CLINICAL SOCIETY
8.30 P.M. (South Kensington Hotel, 41, Queen's Gate Terrace, S.W.7.) Sir Ernest Gowers, Dr. Desmond Curran, Dr. Eliot Slater: The McNaughten Rules.
MANCHESTER MEDICAL SOCIETY
8 P.M. (Medical School, University of Manchester.) *Section of Surgery.* Mr. O. M. Duthie: Retinal Detachment. (Presidential address.)

Wednesday, 14th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Prof. A. C. Frazer: Normal and Defective Fat Absorption.
ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Section of Physical Medicine.* Dr. A. C. Boyle, Dr. Helen Dimsdale: Spondylosis.
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
4 P.M. Prof. A. M. E. Sicé (Basle): Evolution of Therapeutics in the Last Few Years. (Bengué lecture.)
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. I. Whimster: Developmental Anomalies.
MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Section of Pathology.* Dr. R. F. Jennison, Dr. F. Stratton: Transfusion Problems.
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Prof. Andrew Wilson: Use and Abuse of Antibiotics.

Thursday, 15th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. C. J. Popjak: Biological Synthesis.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland Place, W.1
7.30 P.M. Dr. Norman White: Retrospect. (Presidential address.)
CHADWICK LECTURE
5.30 P.M. (Royal Society of Arts, John Adam Street, W.C.2.) Mr. C. J. Regan, F.R.I.C.: Air Pollution.
ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Dr. W. R. Bett: Truants from Medicine.
INSTITUTE OF CHILD HEALTH AND INSTITUTE OF NEUROLOGY
5.30 P.M. (National Hospital, Queen Square, W.C.1.) Dr. A. P. Norman: Ætiological Factors of " Congenital " Group (kernicterus, birth trauma, anoxia, developmental abnormality).
NORTH-WESTERN TUBERCULOSIS SOCIETY
5 P.M. (Royal Infirmary, Manchester, 13.) Mr. F. Ronald Edwards: Recent Trends in Pulmonary Surgery. (Presidential address.)

Friday, 16th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
3 P.M. Dr. George Graham: Value of Physiology in Medicine. (Harveian oration.)
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS, 58, Queen Anne Street, W.1
2.45 P.M. Mr. John Webster Bride: Manchester Pioneers in Obstetrics and Gynæcology. (William Meredith Fletcher Shaw lecture.)
ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Section of Epidemiology and Preventive Medicine.* Prof. H. C. A. Lassen and Dr. J. R. Ibsen (Copenhagen): Epidemic of Poliomyelitis in Copenhagen in 1952.
8.15 P.M. *Section of Radiology.* Dr. J. Blair Hartley: Radiological Methods and Values in Examination of Paranasal Sinus Areas. (Presidential address.)
POSTGRADUATE MEDICAL SCHOOL OF LONDON
12 NOON. Dr. Rae Gilchrist: Coronary Sclerosis.
4 P.M. Sir Neil Hamilton Fairley, F.R.S.: Schistosomiasis.
GUY'S HOSPITAL MEDICAL SCHOOL, London Bridge, S.E.1
5 P.M. Prof. W. Montagna (Brown University, U.S.A.): Architecture, Growth, and Differentiation of Skin. (First of three lectures.)
FACULTY OF RADIOLOGISTS
2.15 P.M. (Royal College of Surgeons, Lincoln's Inn Fields, W.C.2.) *Diagnosis Section.* Dr. J. W. Pierce: Pulmonary Manifestations of Fungous Diseases.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. E. M. Wigley: Eczema.

Saturday, 17th

BIOCHEMICAL SOCIETY
11 A.M. (Westminster Hospital Medical School, Horseferry Road, S.W.1.) Scientific Papers.

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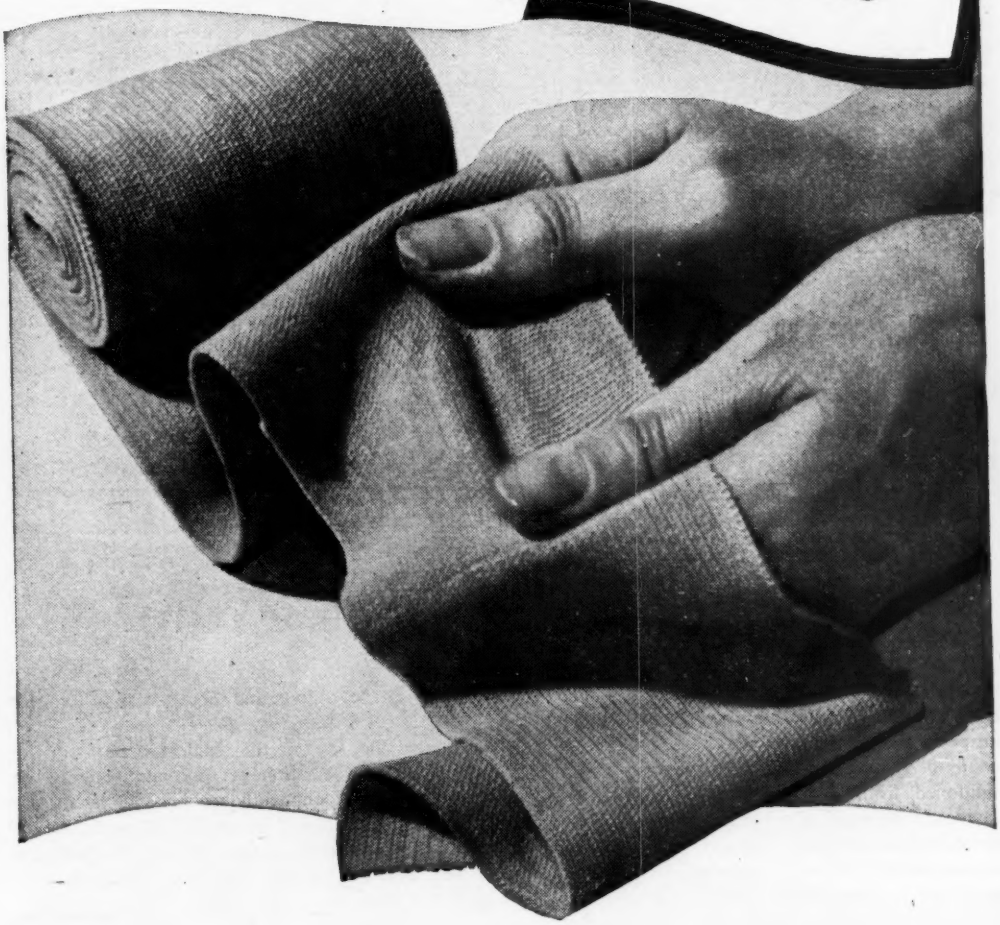

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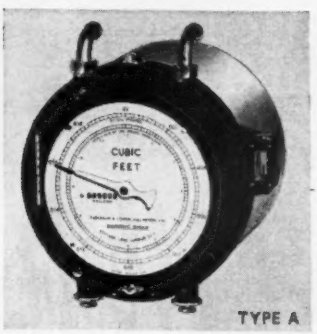

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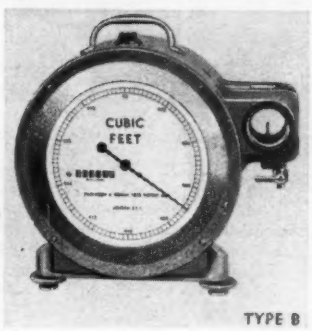

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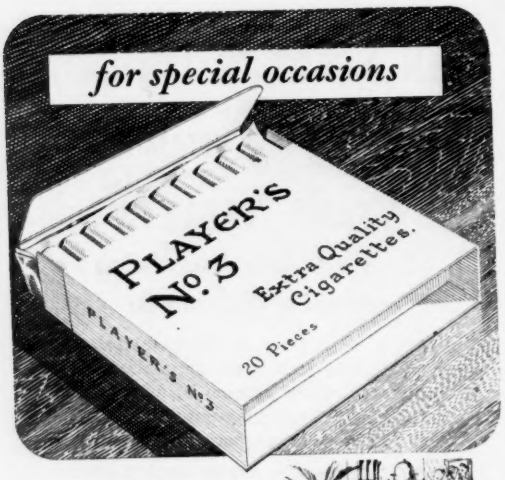

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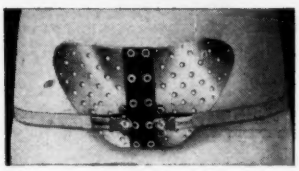

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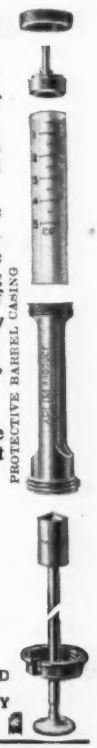

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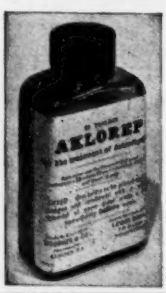

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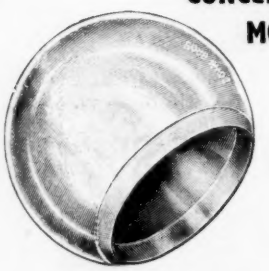

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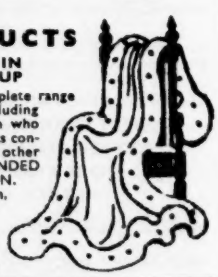

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

UNIVERSITY OF LONDON

A COURSE OF 3 LECTURES on "The Architecture, Growth and Differentiation of Skin" will be delivered by Prof. WILLIAM MONTAGNA (Brown University), at 5 P.M., on 16TH, 19TH, and 21ST OCTOBER, at Guy's Hospital Medical School, St. Thomas's-street, London Bridge, S.E.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

EMPIRE RHEUMATISM COUNCIL

The AUTUMN WEEK-END COURSE will be held at The Arthur Stanley Institute, Middlesex Hospital, Peto-place, Marylebone-road, N.W.1 (Great Portland Street and Regent's Park Underground Stations), on FRIDAY and SATURDAY, 13TH and 14TH NOVEMBER, 1953.

LECTURE-DEMONSTRATIONS

Friday, 13th November
4.15 P.M. Introduction .. .. .. W. S. C. COPEMAN, O.B.E., F.R.C.P. (Chairman)
4.30 P.M. Rheumatism in the Population .. J. H. KELLGREN, F.R.C.P., F.R.C.S.
5.30 P.M. Rheumatoid Arthritis .. .. E. G. L. BYWATERS, F.R.C.P.

Saturday, 14th November
10.15 A.M. Physical Methods in the Treatment of Rheumatic Diseases .. H. A. BURT, F.R.C.P.
11.30 A.M. Gout .. .. G. R. FEARNLEY, M.R.C.P.
2 P.M. The Intervertebral Disc .. OSWALD SAVAGE, O.B.E., M.R.C.P.
3 P.M. Orthopædic Aspects of the Rheumatic Diseases .. J. C. R. HINDENACH, F.R.C.S.
4.15 P.M. Osteo-arthritis .. .. .. F. DUDLEY HART, F.R.C.P.

The fee for the course will be 2 guineas, limited to 60 entries, to be received with remittance, at least 1 week before by the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

UNITED MANCHESTER HOSPITALS
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CLINICAL RESEARCH FELLOWSHIP

Applications are invited from medically qualified persons for a Full-time CLINICAL RESEARCH FELLOWSHIP for work on the clinical and laboratory aspects of Hæmophilia. The research will be carried out in the University Department of Hæmatology at Manchester Royal Infirmary under the supervision of the Director, Dr. John F. Wilkinson, and the ward, outpatient and laboratory facilities of the Department will be available to the Fellow. The stipend will be £800–£1000 p.a. according to age and experience, and the appointment will be for 1 year in the first instance and may be renewable annually up to 5 years.

Applications should give details of previous training and experience, though these need not be in the special field of blood diseases. The names of 2 referees should be given. Applications should be addressed to the undersigned to reach him not later than 31st October, 1953.

F. J. CABLE, Secretary to the Board of Governors.

COURSE IN BONE IN HEALTH AND DISEASE
at the
INSTITUTE OF ORTHOPÆDICS
16TH–21ST NOVEMBER, 1953

16th November Town Section
General affections of the adult skeleton .. Mr. H. J. BURROWS
The kidney and bone diseases .. Dr. R. NASSIM
General properties of bone .. Dr. H. A. SISSONS
General clinical demonstration .. Mr. D. TREVOR

17th November Country Section
Chemistry of bone and biochemical diagnosis of general bone diseases .. Dr. T. F. DIXON
Response of bone and cartilage to infection .. Dr. C. H. LACK
Metabolic cases .. .. Dr. R. NASSIM
General clinical demonstration .. Mr. J. I. P. JAMES

18th November Town Section
Osteomyelitis .. .. Mr. H. J. SEDDON
Rare bone infections .. Mr. H. J. SEDDON
Radiology of secondary deposits in bone .. Dr. F. C. GOLDING

19th November Country Section
Osteoporosis .. .. Dr. F. H. STEVENSON
Congenital disorders of the skeleton .. Mr. A. T. FRIPP
General clinical demonstration .. Mr. P. H. NEWMAN

20th November Town Section
Recent advance in the pathology of tumours of bone .. Dr. H. A. SISSONS
Bone tumours (clinical) .. Mr. K. I. NISSEN
Bone repair .. .. Dr. H. A. SISSONS
Bone grafting and internal prostheses .. Mr. H. J. BURROWS

21st November Town Section
Rheumatoid arthritis .. Dr. H. A. SISSONS
Reticuloses affecting bone .. Dr. R. O. MURRAY

The fee for this course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean, at 234, Great Portland-street, W.1.

INSTITUTE OF ACCIDENT SURGERY
(in conjunction with the Board of Graduate Studies, The Medical School, University of Birmingham)

COURSE IN TRAUMATIC SURGERY
BIRMINGHAM ACCIDENT HOSPITAL—7TH–11TH DECEMBER, 1953

Monday, 7th December
2 P.M. Introduction: Problems and Principles Governing the Repair of Acute Injuries to the Locomotor System at the Acute Phase .. Mr. WILLIAM GISSANE
3 P.M. The Open Wound .. .. Mr. RUSCOE CLARKE
4.30 P.M. Major Hand Injuries .. .. Mr. J. S. HORN

Tuesday, 8th December
10 A.M. Principles of the Treatment of Fractures .. Mr. WILLIAM GISSANE
11.30 A.M. Lecture Demonstration: Fractures .. Mr. H. PROCTOR
2 P.M. Fractures of the Upper end of the Femur .. Mr. WILLIAM GISSANE
3 P.M. Lecture Demonstration: Fractures .. Mr. J. H. HICKS

Wednesday, 9th December
10 A.M. Tour of the Hospital
11.30 A.M. The Treatment of Peripheral Nerve Injuries seen at the Acute Phase .. Mr. J. S. HORN
2 P.M. Some Orthopædic Considerations in the Treatment of Burns .. Mr. D. M. JACKSON
3 P.M. The Pathology of Shock in Trauma .. Dr. J. P. BULL

Thursday, 10th December
10 A.M. Open Fractures .. .. Mr. F. G. BADGER
11.30 A.M. Principles of the Prevention and Treatment of Shock following Trauma .. Mr. RUSCOE CLARKE
2 P.M. The Role of the Anæsthetist in the Treatment of Injuries .. Dr. J. R. ROOK
3 P.M. Infection and Trauma .. Dr. E. J. L. LOWBURY

Friday, 11th December
10 A.M. Closed Injuries to Major Joints .. Mr. RUSCOE CLARKE
11.30 A.M. Rehabilitation .. .. Mr. F. G. BADGER
2 P.M. Head Injuries .. .. .. Mr. J. M. SMALL
3 P.M. Class Conference

The fee for the Course (including lunch and tea) is 7 guineas, payable to the University of Birmingham.

Application should be made to the Secretary, Institute of Accident Surgery, Birmingham Accident Hospital, Bath-row, Birmingham, from whom further particulars may be obtained.

INSTITUTE OF CARDIOLOGY

SPECIAL COURSE IN CARDIOLOGY to be held at the National Heart Hospital, Westmoreland-street, W.1, from 23RD NOVEMBER to 4TH DECEMBER, 1953.

Monday, 23rd November
9.30 A.M. Congenital Heart Disease I .. Dr. MAURICE CAMPBELL
11 A.M. Rheumatic Heart Disease I .. Dr. WILLIAM EVANS
2 P.M. Outpatient Clinic .. .. Dr. GRAHAM HAYWARD

Tuesday, 24th November
10.15 A.M. Outpatient Clinic .. .. Dr. AUBREY LEATHAM
2 P.M. Outpatient Clinic .. .. Dr. PAUL WOOD

Wednesday, 25th November
10.15 A.M. Ward Teaching .. .. Dr. AUBREY LEATHAM
2 P.M. Outpatient Clinic .. .. Dr. MAURICE CAMPBELL

Thursday, 26th November
9.30 A.M. Heart Failure .. .. Dr. WALLACE BRIGDEN
11 A.M. Angina Pectoris .. .. Dr. GRAHAM HAYWARD
2 P.M. Outpatient Clinic .. .. Dr. D. EVAN BEDFORD

Friday, 27th November
9.30 A.M. How to Feel the Pulse .. Dr. D. EVAN BEDFORD
11 A.M. Examination of the Cardiovascular System .. Dr. PAUL WOOD
2 P.M. Outpatient Clinic .. .. Dr. WILLIAM EVANS

Monday, 30th November
9.30 A.M. Congenital Heart Disease II .. Dr. MAURICE CAMPBELL
11 A.M. Rheumatic Heart Disease II .. Dr. WILLIAM EVANS
2 P.M. Outpatient Clinic .. .. Dr. GRAHAM HAYWARD

Tuesday, 1st December
10.15 A.M. Ward Teaching
2 P.M. Outpatient Clinic .. .. Dr. PAUL WOOD

Wednesday, 2nd December
10.15 A.M. Outpatient Clinic .. .. Dr. WALLACE BRIGDEN
2 P.M. Outpatient Clinic .. .. Dr. MAURICE CAMPBELL

Thursday, 3rd December
9.30 A.M. Cardiac Infarction .. .. Dr. GRAHAM HAYWARD
11 A.M. Clinico-Pathological Conference .. Dr. AUBREY LEATHAM, Dr. REGINALD HUDSON
2 P.M. Outpatient Clinic .. .. Dr. D. EVAN BEDFORD

Friday, 4th December
9.30 A.M. Pulmonary Heart Disease .. Dr. D. EVAN BEDFORD
11 A.M. Hypertension .. .. Dr. PAUL WOOD
2 P.M. Outpatient Clinic .. .. Dr. WILLIAM EVANS

The fee for the course is 12 guineas.

Applications should be sent to the Dean at 35, Wimpole-street, W.1.

L.M.S.S.A.

FINAL EXAMINATION: SURGERY, 9th November, 7th December, 1953, 11th January, 1954. MEDICINE, PATHOLOGY, 16th November, 14th December, 1953, 18th January, 1954. MIDWIFERY, 17th November, 15th December, 1953, 19th January, 1954. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

ROYAL FREE HOSPITAL SCHOOL OF MEDICINE, Hunter-street, London, W.C.1. Applications are invited from registered medical practitioners (Men or Women) for the appointment from 1st January, 1954, of LECTURER IN BACTERIOLOGY AND HONORARY ASSISTANT PATHOLOGIST to the Royal Free Hospital Teaching Group. Duties include both teaching and hospital diagnostic routine. 2 or 3 years experience in bacteriology essential. Salary £900–£100–£1100 p.a. with superannuation benefits and family allowances.

Applications (9 copies), stating age, qualifications and experience, with 9 copies of 3 testimonials, to be sent to the Secretary at the above address not later than 17th October, 1953.

WORLD HEALTH ORGANIZATION. Applications are invited from candidates with higher medical qualifications and specialist experience in pædiatrics for the post of PÆDIATRICIAN to work in the All-India Institute of Hygiene and Public Health, Calcutta. Candidates should be over 35 years of age, and should have ability to teach in English at both undergraduate and postgraduate levels. The selected candidate will be appointed by W.H.O. as 1 of a team of 8 international staff who will work with national counterpart staff in the Department of Maternal and Child Health of the Institute. The Pædiatrician will also collaborate with the Professor of Pædiatrics in the Medical College for clinical studies in pædiatrics. He (or she) should preferably have a public-health qualification, and should be particularly interested in the social and public-health aspects of pædiatrics. Previous experience in a tropical country would be an advantage, but is not essential. The initial contract would be for a period of 2 years with a salary approximately equivalent to 7300 U.S. dollars p.a., plus allowances.

Further information can be obtained from the Chief, Personnel Section, World Health Organization, Geneva, to whom written applications should be addressed.

UNIVERSITY OF LONDON. The Senate invite applications for the CHAIR OF MORBID ANATOMY tenable at St. Mary's Hospital Medical School (salary within the range £2250–£2750 a year).

Applications (10 copies), must be received not later than 4th November, 1953, by the Academic Registrar, University of London, Senate House, W.C.1, from whom further particulars should be obtained.

UNIVERSITY OF BRISTOL. Senior Technician required for Histology Laboratory. Must have experience in the main branches of histological technique and also in photomicrography. Salary £450–£550 according to qualifications and experience.

Apply to the Professor of Anatomy, University of Bristol, Bristol, 8.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. Applications are invited for the post of LECTURER IN EXPERIMENTAL PATHOLOGY (grade II—clinical). The appointment is a whole-time one and the salary range is £600–£1500 a year. Commencing salary according to experience. Duties will include teaching of pathology to medical and dental students, and coöperation in special forms of clinical investigation of patients in the United Birmingham Hospitals. Applicants must possess a medical degree, and science or higher degrees will be taken into account.

Applications (12 copies), with the names of 3 referees, should be received by the Assistant Registrar, The Medical School, Birmingham, 15, not later than 17th October, 1953. Further particulars may be obtained from the undersigned.

C. G. BURTON, Secretary.

Edmund-street, Birmingham, 3, September, 1953.

UNIVERSITY OF EDINBURGH. Applications are invited for the appointment of SENIOR LECTURER in the Department of Surgery. The successful applicant will be given an honorary appointment as a Consultant by the South Eastern Regional Hospital Board, Scotland, with duties as an Assistant Surgeon in the Professorial Unit at the Royal Infirmary. Salary will be at the rate of £2000–£2500 p.a., with superannuation benefit and family allowance where applicable.

Further particulars may be obtained from the undersigned, with whom applications giving the names of 3 referees, should be lodged as soon as possible but not later than 31st October, 1953. CHARLES H. STEWART, Secretary to the University.

THE UNIVERSITY OF LEEDS. Dental School and HOSPITAL. The Council will shortly make an appointment to the NUFFIELD RESEARCH FELLOWSHIP IN ORAL BIOLOGY; applications are invited from Biochemists or Biologists with suitable qualifications. An appointment will be made on the grade either of LECTURER (£550–£50–£1100) or of SENIOR LECTURER (£1000–£50–£1400), according to qualifications and experience.

Applications (3 copies), stating age, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 9th November, 1953.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for the JOSEPH HUNTER CHAIR OF PATHOLOGY. The appointment is a whole-time one and the salary, which will be fixed when the appointment is made, will be in the range £2250–£2750. In addition to his teaching and research duties, the Professor will be expected to act in a consultative and advisory capacity to the pathological services of the United Sheffield Hospitals, and to be responsible for the provision, through his department, of the service in morbid anatomy required by the Royal Infirmary Unit of these hospitals. He may expect to receive from the Board of Governors of the United Sheffield Hospitals an honorary contract carrying Consultant status.

Applications (30 copies—1 copy only from overseas candidates) with the names and addresses of referees, and, if desired, copies of testimonials, should reach the undersigned (from whom further particulars may be obtained) by 12th December, 1953.

A. W. CHAPMAN, Registrar.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. THE ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.1. A vacancy exists on the medical staff of the above Hospital for SENIOR HOSPITAL MEDICAL OFFICER, for 2 half-days a week in the Outpatient Department. Candidates should be Fellows or Members of the Faculty of Homœopathy. Salary scale £1300 (at age 32)–£1750. Hospital may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 13th November, 1953.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GYNÆCOLOGIST (Consultant) required at New End Hospital, N.W.3, for 1 half-day a week (may be increased to 2 half-days later). The successful candidate would have charge of 12 Beds. Hospital may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 13th November, 1953.

LEEDS REGIONAL HOSPITAL BOARD invite applications for the post of Locum Tenens CONSULTANT in Anæsthetics for duties in the Thoracic Surgical Unit at the Castle Hill Sanatorium, Hull. The post will be tenable for a period of approximately 6 months commencing on 12th October, 1953, or as soon as available thereafter.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, as soon as possible.

LIVERPOOL REGIONAL HOSPITAL BOARD. WINWICK HOSPITAL. Applications are invited for the post of Whole-time CONSULTANT PSYCHIATRIST with duties at the above Hospital. Applicants should possess the D.P.M. and have had at least 7 years approved psychiatric experience including practical knowledge of outpatient work and experience in electroencephalography and in the interpretation of records. Possession of a higher qualification in general medicine will be considered an advantage. The person appointed will be required to live within reasonable distance of the Hospital.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 31st October, 1953.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of ASSISTANT SENIOR MEDICAL OFFICER on the Headquarters staff of the Board. Salary £1500–£75(4)–£100–£1900 p.a. The successful candidate will be required to devote the whole of his time to his duties and to assist the Senior Administrative Medical Officer with the organisation, planning, and development of the Hospital and specialist services in the Region.

Applications, with particulars of age, qualifications, and experience, together with the names and addresses of 3 referees, should be sent to the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, by 19th October, 1953.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the following posts :—

CONSULTANT ANÆSTHETIST, Lancaster and Kendal Hospital Centre. 9 half-days weekly. Successful candidate will be responsible for the organisation of the Anæsthetic Services and will undertake anæsthetic sessions at the Royal Lancaster Infirmary, Queen Victoria Hospital, Morecambe, and the Westmorland County Hospital, Kendal.

ASSISTANT ANÆSTHETIST, West Manchester Hospital Centre—Park Hospital, Davyhulme (Thoracic Surgery Centre), Eccles and Patricroft Hospital, Stretford Memorial Hospital—whole-time. Salary £1300–£50–£1750 p.a. Successful candidate will work under general direction of Group Consultant.

Application forms from the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, to be returned by 26th October, 1953.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications are invited for the post of ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Saint Mary's Hospitals at a salary of £1300 (at age 32)–£50–£1750. The person appointed will require to undertake duties in both the obstetrical and gynæcological sections of the Hospitals, but his/her services are particularly required in connection with the Obstetrical Units, where the person appointed will be required to take a close and personal interest not only in the anæsthesia for operative obstetrics, but in the general measures to relieve the pain of childbirth.

Forms of application may be obtained from the undersigned. The closing date for applications is 30th October, 1953.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Manchester, 13.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer grade) in the Kingston Group (duties mainly at Kingston Hospital, Wolverton-avenue, Kingston-on-Thames). Work involves considerable amount of emergency duties during which successful candidate would be expected to sleep in, on a duty room basis, unless private residence is so close to Hospital that this would be unnecessary.

Applications (5 copies), giving date of birth, qualifications, experience, names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 31st October, 1953. Applicants may visit Hospital by local arrangement.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD invite applications for the post of CONSULTANT PÆDIATRICIAN (whole-time). The whole-time nature of the appointment will be subject to review after 3 years.

Schedules of application, obtainable from the undersigned, who will also supply further particulars, should be lodged by 31st October, 1953.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore Hospital, Inverness.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT RADIOLOGIST based at Law Hospital, Carluke. Salary on the scale £1300–£1750. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

WORCESTER (near). POWICK MENTAL HOSPITAL. (1104 Beds.) Whole-time ASSISTANT PSYCHIATRIST (£1300–£1750 p.a.). Wide experience in specialty and possession of D.P.M. required. Married accommodation available.

Applications (15 copies) stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 26th October, 1953.

Hospital Services : Junior Appointments

BEARSTED MEMORIAL HOSPITAL (Jewish Maternity Hospital), Lordship-road, N.16. RESIDENT OBSTETRIC HOUSE OFFICER (third post) required at above Hospital, as soon as possible. Obstetric experience an advantage but not essential. Post recognised for the D.Obst.R.C.O.G.

Application forms from the Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, which should be returned at once.

BROMPTON HOSPITAL, S.W.3. Applications invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer grade). Appointment is for 6 months from 1st November. Experience in artificial pneumothorax essential and in E.N.T. work desirable.

Applications, stating age, qualifications with dates, nationality, and appointments held, together with copies of testimonials, by 17th October to KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in General Surgical Department. Appointment for 6 months from 1st December, 1953. Preference given to candidates seeking pre-registration post.

Applications, with copies of 2 testimonials, to Medical Director by 17th October, 1953.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Women medical practitioners for the appointment of JUNIOR RESIDENT ASSISTANT PATHOLOGIST. Salary in accordance with the Ministry of Health scale for House Officers. The appointment is for 6 months in the first instance, duties to commence 1st December, 1953.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th October, 1953.

GERMAN HOSPITAL, Dalston, London, E.8. (General— 153 Beds.) Applications are invited for the 12 months appointment of CASUALTY OFFICER with anæsthetic duties (Senior House Officer grade), which is now vacant.

Apply Group Secretary, Hackney Hospital Management Committee, E.9, by 19th October, quoting reference GH/SHO.

GUY'S HOSPITAL AND SOUTH EAST METRO-POLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill an established vacancy as SENIOR REGISTRAR in General Medicine to the South East Metropolitan Regional Hospital Board and the Board of Governors of Guy's Hospital. Preference will be given to applicants who have held an appointment as Registrar in General Medicine at a Teaching Hospital. The appointment will be made jointly by the bodies concerned and the tenure of the post will be for 3 years. The holder will be required to spend the first 2 periods in the Regional Hospitals in the Bromley and Farnborough Group and the final year at the Teaching Hospital, expiring on 30th September, 1956. The post, which will be reviewed annually, is subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales) with duties commencing on 1st December, 1953.

Forms of application are obtainable from and should be lodged with the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 31st October, 1953.

HACKNEY HOSPITAL, London, E.9. (General—807 Beds.) 2 CASUALTY HOUSE OFFICERS (6 months appointments) are required, 1 to act also as House Officer to the E.N.T. Department and 1 as House Officer to the Skin Department.

Applications from second or third post candidates should reach the Group Secretary, Hackney Hospital Management Committee, London, E.9, as soon as possible, stating for which post application is made.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. HOUSE SURGEON (radiotherapy) required 1st December.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 17th October.

HIGHLANDS HOSPITAL, Winchmore Hill, N.21. (General Hospital—818 Beds.) SENIOR HOUSE OFFICER (resident) for T.B. Unit (100 Beds).

Applications, with copies of 3 testimonials, to Hospital Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident), to Orthopædic, Casualty, and Fracture Departments. Recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, dates and details of experience, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex. Closing date 20th October, 1953.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for appointment as RESIDENT CASUALTY OFFICER, vacant now. The position is graded as Senior House Officer or House Officer, according to experience.

Forms of application to be obtained from the Physician-Superintendent at the Hospital.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the Radiotherapy Department. The appointment will be for 6 months in the first instance at a salary of £670 p.a.

Applications (6 copies), together with 6 copies of 3 recent testimonials, should be received by the House Governor by 19th October, 1953. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the Department of Anæsthetics. The appointment will be for 6 months in the first instance at a salary of £670 p.a.

Applications (6 copies), together with 6 copies of 3 recent testimonials, should be received by the House Governor by 31st October, 1953. H. BRIERLEY, House Governor.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. Applications are invited for the post of Full-time MEDICAL REGISTRAR (Registrar grade). The appointment is for 1 year in the first instance and is non-resident. Duties include attendance at Country Branch near Letchworth.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the House Governor, not later than 16th October, 1953.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. A vacancy occurs 1st December, 1953, for RESIDENT SURGICAL OFFICER. Appointment for 6 months (with prospect of renewal), of which 2 will be at the Country Branch, near Letchworth. Post graded as Senior House Officer or Registrar, according to qualifications and experience. Previous surgical experience necessary.

Applications, stating age, qualifications with dates and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 16th October.

THOMAS BROWN, House Governor.
London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st December, 1953, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and Refill Clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 16th October.

THOMAS BROWN, House Governor.
London Chest Hospital, E.2.

MANOR HOUSE HOSPITAL, Golders Green, N.W.11. (Exempted from National Health Service.) Required, RESIDENT SURGICAL OFFICER (Male). Salary £700 p.a., less £100 p.a. deducted for emoluments. 6 months appointment, renewable.

Applications, stating age, nationality, qualifications, and surgical or orthopædic experience, with copies of 3 testimonials, to—

W. F. PENDRILL, Secretary.

MIDDLESEX HOSPITAL, W.1. Applications are invited for the post of TRANSFUSION OFFICER AND RESEARCH ASSISTANT to the Director of Surgical Studies, vacant 1st January. The post is graded as Registrar.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W.1. Applications are invited for the post of OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR, vacant 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W.1. Applications invited for the post of SENIOR NEUROLOGICAL REGISTRAR, vacant on 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W.1. Applications invited for 1 post of SENIOR REGISTRAR and 2 posts of REGISTRAR to the Anæsthetic Department, vacant on 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W.1. Applications are invited for 2 posts of REGISTRAR to the Department of X-ray Diagnosis, vacant 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W. 1. Applications invited for 2 posts of SURGICAL REGISTRAR, vacant 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W.1. Applications invited for the post of MEDICAL REGISTRAR, vacant 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

MIDDLESEX HOSPITAL, W.1. Applications invited for the post of PÆDIATRIC REGISTRAR, vacant 1st January.

Rules and application forms obtainable from Deputy Superintendent to whom applications, naming 3 referees, should be sent by 2nd November.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. Locum REGISTRAR in Surgery required from 27th October to 9th November. Higher qualification in surgery desirable but not essential. Work consists mainly of general and traumatic surgery. Non-resident. Required to sleep in on duty nights.

Applications to Group Secretary immediately.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE PHYSICIAN (resident), required, for 1st December, 1953, for 6 months. Recognised for pre-registration students but registered medical practitioners may apply.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials, to Secretary of Hospital, by 19th October.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. RESIDENT ANÆSTHETIST (Senior House Officer), vacant 1st December, 1953. Hospital recognised for training for D.A. and F.F.A. R.C.S., and offers a wide experience in anæsthetics (over 10,000 operations a year). Appointment for 1 year. Salary £670 p.a., less £130 p.a. for residence.

Applications, stating age, qualifications, experience and nationality, together with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, by 19th October.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) Part-time SENIOR REGISTRAR in Pædiatrics (non-resident), Transitional (6 sessions a week), Prince of Wales's General Hospital, London, N.15, and other hospitals in the Group.

(2) Full-time SENIOR REGISTRAR in Orthopædics (non-resident), Transitional, West Ham Group of hospitals. For duty mainly at Queen Mary's Hospital for the East End and at East Ham Memorial Hospital.

(3) Full-time SENIOR REGISTRAR in Anæsthetics (non-resident with on-call rota), Transitional, North Middlesex Hospital and Annexes, London, N.18. Post recognised for F.F.A. examination.

(4) Full-time SENIOR REGISTRAR in Surgery (non-resident, sleeping-in on duty nights), Transitional, North Middlesex Hospital and Annexes, N.18. Duties cover general and genito-urinary surgery.

(5) Full-time SENIOR REGISTRAR in Medicine (resident or non-resident), Transitional, General Hospital, Southend-on-Sea, Essex, and other hospitals in the Group.

Appointments are open to candidates who have, since November, 1950, completed or substantially completed training as Senior Registrars and are for 1 year in the first instance with possible extension to 2.

Separate applications in duplicate, detailing date of birth, qualifications, experience, present appointment, grade and salary, with 2 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 24th October, 1953.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. RESIDENT HOUSE OFFICER for Casualty and Anæsthetic duties. Vacant now for period of 6 months. Registered practitioners.

Applications, with all particulars, and copies of 2 testimonials, to House Governor.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. RESIDENT HOUSE SURGEON (general surgery, obstetrics and gynæcology), for period of 6 months, vacant now. Registered practitioners only.

Applications, with full details, and copies of 2 testimonials, to House Governor.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, CASUALTY OFFICER (first, second, or third post). Duties include inpatient, outpatient and casualty work. Post recognised for F.R.C.S. Vacant now.

Applications, stating age, nationality, and qualifications, to the Secretary.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICERS (2). These appointments will be made for 2 consecutive periods of 6 months commencing 1st December, 1953. First appointment as House Physician and second as House Surgeon and Casualty Officer in each case.

Application forms may be obtained from the Secretary at Hackney Road and should be returned with copies of not more than 3 testimonials on or before 24th October, 1953.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. HOUSE PHYSICIAN (Male or Female) required (third post) for 6 months commencing 5th November 1953.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 14th October, 1953.

ST. JAMES' HOSPITAL, Ouseley-road, Balham, S.W.12. SENIOR HOUSE OFFICER (orthopædics and trauma). Recognised for F.R.C.S.

Applications, stating age, qualifications, experience, and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, 14, Atkins-road, Balham, S.W.12, by 17th October.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for the post of SENIOR HOUSE OFFICER (ophthalmology, E.N.T., and radiotherapy). Salary £670 p.a., less £130 for residential emoluments.

Applications, stating qualifications, and experience, with copies of 3 recent testimonials, to be sent to the Hospital Secretary as soon as possible.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SURGICAL REGISTRAR at the above Hospital. Duties to commence on 1st January, 1954. Appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing and Fellows of the Royal College of Surgeons.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned by the 30th October, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of REGISTRAR to the X-ray Department of the Royal Free Hospital. Duties to commence on 1st January, 1954. Appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing, and should hold the D.M.R.(D.).

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 24th October, 1953.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SENIOR REGISTRAR to the X-ray Department at the Royal Free Hospital. Duties to commence on 1st January, 1954. Appointment for 1 year in the first instance. Candidates should be registered medical practitioners of not more than 10 years standing, and should hold the D.M.R.(D.). The present Locum is an applicant for the post.

Formal applications, giving details of experience, &c., together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 24th October, 1953.

ST. ANN'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (Senior House Officer) to above Hospital, for a period of 6 months from 19th November, 1953.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 19th October, 1953.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. HOUSE SURGEON. Recognised for F.R.C.S. Vacant 1st November. Approved for Pre-registration Service.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy for a HOUSE SURGEON to the E.N.T. Department (Senior House Officer) on 1st January, 1954.

Further particulars and form of application, which must be returned not later than Monday, 2nd November, 1953, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 6th January, 1954, for an ASSISTANT RESIDENT MEDICAL OFFICER (grade—Senior House Officer) at the Country Branch Hospital, Tadworth, Surrey (101 Beds).

Further particulars and form of application, which must be returned not later than Monday, 2nd November, 1953, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies on 15th January, 1954, for the following Senior House Officers :—

2 HOUSE PHYSICIANS.
2 HOUSE SURGEONS.

Further particulars and form of application, which must be returned not later than 2nd November, 1953, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 18th November, 1953, for a RESIDENT DENTAL HOUSE SURGEON (Senior House Officer). Salary £670 p.a. The post is recognised for the Fellowship in Dental Surgery, Royal College of Surgeons. Experience is given in both oral surgery and orthodontics.

Further particulars and form of application, which must be returned not later than 19th October, 1953, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 15th November, 1953, for a HOUSE SURGEON to the Orthopædic and Plastic Departments (Senior House Officer).

Further particulars and form of application, which must be returned not later than 19th October, 1953, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WEST LONDON HOSPITAL, Hammersmith-road, London, W.6. HOUSE OFFICER (anæsthetics) required immediately.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, by 17th October.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR REGISTRAR to Orthopædic Department for 1 year in first instance for 1st January, 1954. Candidates must hold the F.R.C.S. (Eng.).

Applications (7 copies), with names of 2 referees, to House Governor by 30th October.

WHITTINGTON HOSPITAL, N.19. Applications are invited for the post of HOUSE SURGEON. Immediate vacancy. Unit consists of general surgical beds with large gastro-enterology section. Post recognised for F.R.C.S. and includes courses for the final part of the examination.

Applications, stating age, qualifications, and previous experience, together with copies of 2 recent testimonials, and the name of 1 referee, to the Medical Superintendent, Whittington Hospital, Highgate Hill, N.19, by 19th October, 1953.

WHITTINGTON HOSPITAL, N.19. North West Metro-POLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required at above Hospital, General Surgical Unit of 64 Beds. Post now vacant. Hospital may be visited by appointment with the Medical Superintendent.

Application forms obtainable from, and returnable to, the Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, N.6.

ALTRINCHAM GENERAL HOSPITAL AND ANNEXE. (130 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgical) to commence as soon as possible. This appointment, in a busy General Hospital staffed by Manchester Consultants, affords excellent experience to suitably qualified candidates. Opportunity will be given to assist in the major surgical work of the Hospital. Post recognised under F.R.C.S. regulations.

Applications, to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

AYLESBURY. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Royal Buckinghamshire Hospital

SENIOR HOUSE OFFICER to Accident and Orthopædic Department (which is centred upon this Hospital and comprises 48 Beds), vacant now.

SENIOR HOUSE OFFICER to Accident and Orthopædic Department, vacant now. Duties include charge of Casualty Department together with those of Senior Resident. Salary £670 p.a., less £140 p.a. for residence, &c.

Applications for the above appointments, with 2 testimonials, to Secretary-Superintendent as soon as possible.

Tindal General Hospital

RESIDENT SURGICAL OFFICER (Senior House Officer), vacant 12th October, 1953. The Surgical Unit consists of 100 Beds and undertakes all the general surgery for the area. The post offers excellent training in practical surgery, and is eminently suitable for an F.R.C.S. Final candidate. Salary £670 p.a., less £140 p.a. for board-residence. Further details on request.

Please apply, with 2 testimonials, to the Administrative Officer, as soon as possible.

HOUSE SURGEON (E.N.T.), Male or Female, vacant now. New department with high turnover and 4 Outpatient Clinics weekly. No casualty department. Recognised for F.R.C.S. and D.L.O.

HOUSE PHYSICIAN (Chest Unit), second or third post, Male or Female, vacant 12th October. Recognised for F.R.C.S. Duties include care of about 20 chest cases (including T.B. Chalets), which may increase in due course, and 4 outpatient clinics weekly, including refills, forming a progressive chest unit for the Aylesbury area. Instruction in bronchoscopy and bronchography given. An acute Geriatric Unit, a small long-stay Annexe, and a medical Outpatient Clinic provide some general medicine. No casualty department.

Both posts are recognised for Pre-registration Service, but registered practitioners are invited to apply.

Applications, with 2 testimonials, to the Administrative Officer as soon as possible.

ASHFORD (near), KENT. WILLESBOROUGH HOS-PITAL. Applications are invited for the appointment of HOUSE SURGEON at the above Hospital. Good experience in general surgery with some casualty work. Married quarters available. Salary £350, £400, or £450 a year, less £100 a year for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, should be forwarded to the Group Secretary, " Ash-Eton," Radnor Park West, Folkestone.

ASHFORD HOSPITAL, Ashford, Kent. Applications are invited for the appointment of RESIDENT HOUSE SURGEON (casualty and orthopædics) at the above Hospital. Salary £350, £400, or £450 a year according to experience. A deduction of £100 a year will be made in respect of residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, " Ash-Eton," Radnor Park West, Folkestone.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SENIOR HOUSE OFFICER (Male) for general medical duties. Post vacant 27th November, 1953.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital by 17th October.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (Male) required at above Hospital for Traumatic and Orthopædic Unit. 6 months appointment, vacant 27th October. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital, as soon as possible.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Anæsthetics. Large general hospital recognised for D.A. 6 months appointment.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER (Male) required at above Hospital for Special Departments (E.N.T., pædiatric, ophthalmology, &c.). 6 months appointment, vacant 27th October.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital as soon as possible.

APPLEY BRIDGE, near WIGAN. WRIGHTINGTON HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER required. Regional Centre for orthopædic tuberculosis, 200 adults and 100 children. £700 by annual increments of £50 to £1000 p.a., less £155 for residence.

Apply to Consultant Surgeon-Superintendent with 2 references or names of 2 referees.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. HOUSE SURGEON required at Ashton-under-Lyne General Hospital (800 Beds). Preference will be given to pre-registration applicants. Recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Astley-road, Stalybridge, Cheshire.

BEXHILL-ON-SEA. BEXHILL HOSPITAL. (62 Beds.) 2 HOUSE SURGEONS. Posts now vacant. (A small modern hospital on the South coast.) Considerable acute surgical work and busy Outpatient Department. Excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical, and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (first or second post held). Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOS-PITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (surgical), first or second post held. Pre-registration post. Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or the names of referees, to the Hospital Secretary.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAY-MEADS HOSPITAL. (400 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of HOUSE OFFICER (medical), Male or Female, first, second, or third post held, with primary attachment to Pædiatric Ward of 24 Beds, and other duties in connection with 8 skin-beds and Casualty Department. Salary £350–£450 p.a., less £100 p.a. for residential emoluments. Appointment to commence as soon as possible.

Applications, stating nationality, age, qualifications, and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary as soon as possible.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. HOUSE SURGEON required immediately. Appointment is for 6 months but renewable. Hospital carries resident staff of 4 and provides 2-year course of instruction, which is recognised for the Diplomas of D.O. (Eng.) and F.R.C.S. (Eng.) in Ophthalmology. Wide experience available in all branches, including surgery.

Applications, stating age, nationality, qualifications and experience, by 24th October, 1953, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. (156 Beds.) SENIOR HOUSE OFFICER required December, 1953. Applicants must have held house appointments. Experience in ophthalmology essential.

Applications, stating age, nationality, qualifications, and experience, with names of 2 referees, by 24th October, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM ACCIDENT HOSPITAL (215 Beds), Bath-row, BIRMINGHAM, 15. HOUSE SURGEONS (Male or Female). 1 post now vacant, 3 posts vacant 1st November. Recognised for F.R.C.S. The appointments will be for a period of 6 months, of which 2 may be spent in the Burns Unit (Medical Research Council). The hospital is the largest traumatic unit in the country and treats 50,000 new patients each year. Posts are open to registered practitioners and pre-registration applicants and offer ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff.

Applications, with copies of recent testimonials or names of 2 referees, to the Administrator.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the post of NON-RESIDENT REGISTRAR in Dermatology (Registrar grade) for duty in the above hospitals. Tenable for 1 year in the first instance. Candidates must be registered medical practitioners and should have held a resident hospital appointment in medicine or surgery. The possession of the M.R.C.P. will be an advantage.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned to him not later than 24th October, 1953.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) **Stoke-on-Trent. North Staffs Royal Infirmary** (475 Beds)
Whole-time REGISTRAR in General Surgery. Post allied to orthopædic and accident services. Successful candidate will act as Deputy Resident Surgical Officer. Resident.

(*b*) **Stourbridge. Corbett Hospital** (106 Beds)
Whole-time REGISTRAR in General Surgery. Resident.

(*c*) **Walsall General Hospital** (181 Beds)
Whole-time REGISTRAR in General Surgery. Resident.

(*d*) **Birmingham. St. Margaret's Hospital** (1470 Beds)
Whole-time REGISTRAR in Psychiatry. Recognised for D.P.M. Resident or non-resident.

(*e*) **Wolverhampton Royal Hospital** (310 Beds)
Whole-time RESIDENT CASUALTY OFFICER (Registrar). Recognised for F.R.C.S.

(*f*) **Stoke-on-Trent. North Staffs Royal Infirmary** (475 Beds)
Whole-time REGISTRAR in Orthopædics. Some duties at Hartshill Orthopædic Hospital (77 Beds). Non-resident.

(*g*) **South Warwickshire Group of hospitals**
Whole-time REGISTRAR in Orthopædics. Duties mainly at Warwick Hospital (352 Beds, including 52 orthopædic). Resident. Post recognised for F.R.C.S.

(*h*) **Stoke-on-Trent. North Staffs Royal Infirmary** (475 Beds)
Whole-time REGISTRAR in E.N.T. Surgery. Experience specialty essential. Resident or non-resident.

(*i*) **Shrewsbury Group of hospitals**
Whole-time REGISTRAR in E.N.T. Surgery. Duties at E.N.T. Hospital, Shrewsbury (68 Beds), Copthorne Hospital (168 Beds). Considerable experience specialty an advantage. Resident or non-resident.

Posts (*b*), (*f*) and (*g*), experience specialty essential; higher qualification an advantage.

Application forms from Secretary, 10, Augustus-road, Birmingham, 15, to be returned before 26th October, 1953.

BIRMINGHAM, 9. LITTLE BROMWICH HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in General Medicine. This Hospital is being developed as a General Hospital, 60 Beds now available together with outpatient work. Post now vacant.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to the Physician-Superintendent.

BIRMINGHAM, 18. WINSON GREEN HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female). £700–£50–£1000 (less £120 p.a., board and lodging if resident). Subject to terms and conditions of service for medical and dental staffs and National Health Service superannuation regulations.

Applications, stating age and qualifications, to be sent to the Medical Superintendent.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. 2 SENIOR HOUSE OFFICERS in Anæsthetics (resident) required. Centred at Dudley Road Hospital (800 Beds), but will include duties and a period of residence at other hospitals in the Group. Appointments recognised for training for Diploma in Anæsthetics and F.F.A. R.C.S. Duties include list and emergency work in general surgery, E.N.T., obstetrics and gynæcology.

Applications with copies of 2 recent testimonials to the Secretary, Hospital Management Committee, Dudley Road Hospital, Birmingham, 18.

BOVEY TRACEY (near), SOUTH DEVON. HAWKMOOR CHEST HOSPITAL. (214 Beds with Thoracic Unit.) 2 SENIOR HOUSE OFFICERS required. 1 to serve jointly in the Surgical and Medical Departments and 1 for the Medical Wards. Resident single accommodation available.

Applications, stating age, qualifications and experience, with names of referees, to be sent to the Group Secretary, Exeter Special Hospital Management Committee, 26, Queen-street, Exeter, as soon as possible.

BOVEY TRACEY (near), SOUTH DEVON. THORACIC SURGICAL CENTRE FOR DEVON (including Plymouth Area). SENIOR HOUSE OFFICER required for this Centre situated at Hawkmoor Chest Hospital. Both non-tuberculous and tuberculous thoracic surgical work is undertaken. Valuable experience in chest diseases is offered and previous experience in this branch, although desirable, is not essential. Resident single accommodation available.

Applications, stating age, qualifications and experience, together with copies of testimonials, or names of referees, to be sent to the Group Secretary, Exeter Special Hospital Management Committee, 26, Queen-street, Exeter, as soon as possible.

BATH. ROYAL NATIONAL HOSPITAL FOR RHEU-MATIC DISEASES. Applications are invited from registered medical practitioners for 2 posts of HOUSE PHYSICIAN at the above Hospital. Both posts are graded Senior House Officer. The Rheumatism Research Unit of the South Western and Oxford Regions is attached to the Hospital. The Hospital is recognised for Part II of the Diploma in Physical Medicine.

Applications, stating age, qualifications and experience, with 3 testimonials, should be forwarded to—
R. J. WILKINS, Deputy Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ROYAL UNITED AND BATH AND WESSEX ORTHOPÆDIC HOSPITALS. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (orthopædics). The post is a joint one between the above Hospitals, both Hospitals being adjacent to each other. The appointment is of 12 months duration and is graded Senior House Officer.

Applications, stating age, qualifications and experience, should be forwarded with 3 copies of recent testimonials, to the undersigned as soon as possible.
J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee
Manor Hospital, Bath.

BATH. ROYAL UNITED HOSPITAL. (404 Beds.) Applications are invited from medical practitioners for the post (third appointment) of HOUSE SURGEON (orthopædic and traumatic) at the above Hospital, a modern general hospital with recently completed permanent twin operating-theatres. The post offers opportunity not only in traumatic surgery but in "cold" orthopædics and the specialised field of arthritic surgery.

Applications, stating age, qualifications and experience, with 3 testimonials, should be forwarded to—
R. J. WILKINS, Deputy Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE PHYSICIAN at above Hospital. The post is recognised for pre-registration purposes.

Applications, stating age, qualifications and experience, with 3 testimonials, to be forwarded to—
J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE SURGEON at above Hospital. The post is recognised for pre-registration purposes, and under the F.R.C.S. regulations.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to—
J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. (614 Beds.) Applica-tions are invited from medical practitioners for the post of HOUSE SURGEON (orthopædic and traumatic) at above Hospital. The post offers opportunity not only in traumatic surgery but in cold orthopædics and the specialised field of arthritic surgery. The Hospital is recognised under the F.R.C.S. regulations and for pre-registration purposes.

Applications, stating age, qualifications and experience, with 3 testimonials, should be forwarded to the undersigned as soon as possible.
J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from regi-tered medical practitioners for the post of RESIDENT CASUALTY OFFICER (senior House Officer grade) at above Hospital.

Applications, stating age, qualifications and experience, with 3 testimonials, should be forwarded to—
J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT PATHOLOGIST at above Hospital. The successful applicant will work mainly in the Area Blood Bank at that Hospital, with duties at the Regional Blood Bank, Bristol, and at the Bath Central Laboratory. The post is graded Senior House Officer and is tenable for 1 year.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded to the undersigned as soon as possible.
J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN vacant 17th November. The appointment is recognised for pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Orthopædic Surgery for the above Hospital Group consisting of 18 hospitals with 1548 Beds. The orthopædic work is conducted mainly at the 2 major hospitals of the Group, viz., Royal Victoria Hospital, Bournemouth, and Poole General Hospital, with 100 orthopædic beds and large Outpatient Departments covering both traumatic and non-traumatic orthopædics in all branches in children and adults.

Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Bournemouth, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

BRISTOL. COSSHAM MEMORIAL HOSPITAL. Appli-cations are invited for appointment of SENIOR HOUSE OFFICER in General Surgery at Cossham Memorial Hospital, a general hospital of 89 Beds situated in East Bristol.

Applications, quoting age, experience, and names of 2 referees, to the Group Secretary, Frenchay Hospital, Bristol.

BRISTOL. UNITED BRISTOL HOSPITALS. Bristol EYE HOSPITAL. Applications are invited for the resident post of HOUSE SURGEON in the Bristol Eye Hospital. Previous ophthalmic experience not essential.

Applications should be sent immediately to Secretary to the Board, Royal Infirmary Branch, Marlborough-street, Bristol, 2.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Southmead Hospital, Bristol (571 Beds, including 133 maternity)
SENIOR HOUSE OFFICER (anæsthetics).
HOUSE OFFICER (anæsthetics).
Both appointments recognised for D.A.

Applications to be submitted to the Group Secretary, Southmead Hospital, Bristol.

BRISTOL CLINICAL AREA. The Board of Governors OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of SENIOR REGISTRAR in Psychiatry to the Bristol Mental Hospitals. Applicants should have had considerable experience in psychiatry. Possession of the Diploma in Psychological Medicine and/or a higher medical qualification is desirable. The appointment will be made for 1 year in the first instance and, subject to satisfactory service, will be renewable annually for a further period not exceeding 4 years in all. The post offers considerable opportunities for clinical work and research in all branches of adult psychiatry.

Applications (12 copies), stating date of birth, qualifications, and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th October, 1953.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of SENIOR HOUSE OFFICER for Surgical Tuberculosis Unit, comprising chiefly orthopædic tuberculosis, genito-urinary tuberculosis, and other non-pulmonary and combined lesions. Post tenable for 1 year. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of HOUSE OFFICER (orthopædic surgery), first, second, or third post. Post tenable for 6 months and is recognised under F.R.C.S. regulations. Salary in accordance with the terms of service issued by the Ministry of Health, plus £50 p.a.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRADFORD CHILDREN'S HOSPITAL. (102 Beds.) 2 HOUSE OFFICERS (Female), 1 vacant now, 1 vacant 1st November. Salary £350–£450 p.a., less £100 p.a. residential emoluments. Hospital recognised for D.C.H.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. House Officer (anæsthetics), vacant 1st December. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL.

SENIOR ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £670 p.a., less £130 p.a. residential emoluments.

HOUSE SURGEON (general and plastic), vacant now.

HOUSE SURGEON (general and casualty), vacant now.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now.

Salary for above 3 posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD ROYAL INFIRMARY.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now.

HOUSE OFFICER (anæsthetics), vacant now.

Salary for above posts £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.

Bury General Hospital

RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) with duties mainly at Bury General Hospital. The post, tenable for 1 year, affords opportunities for gaining experience in all branches of pathology. Salary and conditions of service as Ministry of Health scale.

SENIOR HOUSE OFFICER (surgical).

HOUSE OFFICER (surgical), pre-registration post.

Applications are invited for the above posts and should indicate age, nationality, qualifications, and experience, and should be sent to the undersigned as soon as possible.

H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BRIGHTON GENERAL HOSPITAL, Elm-grove, BRIGHTON, 7. HOUSE PHYSICIAN (geriatrics). Post now vacant. Salary in accordance with national scale.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, to the Physician-Superintendent.

BRIGHTON GROUP HOSPITALS. 2 House Surgeons for duties in the E.N.T. Department (78 Beds). Vacant mid-October. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, &c., and names and addresses of 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) CASUALTY HOUSE SURGEON (1 of 3), including duties with Orthopædic and Traumatic Unit. Pre-registration post and recognised for F.R.C.S. from 1954. Vacant early October.

Applications, giving details of age, experience, &c., together with names and addresses of 2 referees, to be sent to the Administrative Officer.

BEDFORD GENERAL HOSPITAL. (435 Beds.) Bedford GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required. Post vacant 20th November, 1953. Preference will be given to persons seeking pre-registration posts under the Medical Act, 1950. The appointment offers exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, 3, Kimbolton-road, Bedford.

BRIDGEND GENERAL HOSPITAL, Quarella-road, BRIDGEND. MID GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics). This Hospital is recognised for the F.F.A.R.C.S. examinations and has a panel of distinguished full-time and visiting Consultants.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

CAERPHILLY DISTRICT MINERS' HOSPITAL. Senior HOUSE OFFICER (surgery) and 2 HOUSE SURGEONS (pre-registration if suitable candidates available) required at above Hospital—6 miles from Cardiff (144 Beds for acute general surgery, orthopædics, E.N.T., ophthalmology, and gynæcology; 26 Beds for general medicine); busy Outpatient, Casualty, and Pathology Departments.

Apply, with full particulars, to Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (265 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON. The above post, which is recognised for the F.R.C.S. Diploma, is now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Senior SURGICAL REGISTRAR (Transitional) required. Applicants must be in their fourth or subsequent years as Senior Surgical Registrars, or have occupied such a post for 3 or more years and vacated the post after 6th November, 1950. Appointment for 1 year with possible extension to 31st December, 1955.

Apply, giving full particulars and names of 3 referees, to Secretary, United Cambridge Hospitals, by 24th October.

CAMBORNE. TEHIDY CHEST HOSPITAL. (190 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON for the new Thoracic Surgical Unit which will finally extend to approximately 40 Beds, in modern surgical block. Salary £350–£450, less £100 p.a. residential emoluments.

Apply to the Hospital Secretary, Tehidy Chest Hospital, Camborne.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. NON-RESIDENT REGISTRAR, required in the E.N.T. department for 5 half-days a week. Applicants able to undertake 2 or 3 sessions only would be considered. Canvassing will disqualify, but candidates may visit the Hospital if they so desire.

Forms of application may be obtained from the Secretary, Queen Mary's Hospital for Children, Carshalton, Surrey, to whom they should be returned duly completed by 24th October, 1953.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. Required, HOUSE SURGEON (resident) for 6 months, for general surgical duties and for duties in E.N.T. Department. Salary according to national scale.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be sent to the Secretary by 17th October.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum ANÆSTHETIC REGISTRAR (whole-time) required for 2 weeks from 29th October. Salary £16 per week.

Applications to Group Secretary, St. Helier Hospital, Carshalton.

CHESTERFIELD ROYAL HOSPITAL. Applications are invited for the post of RESIDENT CASUALTY OFFICER (pre-registration grade or Senior House Officer status if person appointed has sufficient experience) now vacant at above Hospital. Ministry of Health salary and conditions of service. There are 2 Junior and 1 Senior Casualty Officers in the Department. The post is recognised for training for the F.R.C.S. examination. Duties are primarily in the Casualty Department but by mutual arrangement 1 Casualty Officer performs duties in the Accident and Orthopædic Department, and thus opportunities occur for all 3 to gain experience in that department.

Apply, stating age, nationality, and qualifications, with copies of recent testimonials, to—

M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.

CHESTERFIELD ROYAL HOSPITAL. House Surgeon (pre-registration post) required immediately in this busy General Hospital. National salary and conditions.

Apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD HOSPITAL MANAGEMENT COM-MITTEE. Whole-time NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for Whittington Hall, Chesterfield (372 female mentally deficient patients), and Scarsdale Hospital, Chesterfield. Salary £700–£50–£1000 p.a.

Apply M. H. BOONE, Secretary, from whom further particulars may be obtained.

COVENTRY AND WARWICKSHIRE HOSPITAL. (346 Beds.) SENIOR HOUSE OFFICER (fracture and orthopædic) required for Receiving-Room duties. Vacant 31st October. Recognised for F.R.C.S.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY HOSPITALS. Resident Senior House OFFICER in Anæsthetics required, vacant now. Salary £670 p.a. Recognised for F.F.A. R.C.S. Excellent experience in all types of general anæsthetics. Duties at Coventry and Warwickshire Hospital and Gulson Hospital.

Applications to the Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY. GULSON HOSPITAL. Senior House OFFICER for Gynæcological and Obstetric Department, vacant 21st November. Recognised for D.Obst.R.C.O.G.

Applications to Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COLCHESTER. ESSEX COUNTY HOSPITAL. (189 Beds.) Applications invited for post of HOUSE PHYSICIAN (first, second or third post). Tenable for period of 6 months from mid-November, 1953. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CHELMSFORD AND ESSEX HOSPITAL. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer), resident and tenable for 6 months. It offers excellent experience in the treatment of fractures and diagnosis of acute medical and surgical emergencies. Opportunity is given for the Casualty Officer to follow up his cases in the wards and to obtain operating experience in major theatre under the guidance of the Consultants or the Resident Surgical Officer. Off-duty time is generous and the post is one likely to suit both an Officer seeking a higher qualification in surgery or one intending General Practice. Salary £670 p.a., with £130 deduction for residential emoluments.

Apply Secretary, Chelmsford Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford, Essex.

CHESTER (near). MEADOWSLEA HOSPITAL. WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident). Salary £700–£1000 p.a., less recognised charge for services provided by Hospital. The appointed candidate will be a member of a Chest team covering a wide area in North Wales with excellent opportunities for experience in hospital and chest clinic practice. Applications from ex-patients will be welcomed. A flat is available for the successful candidate.

Applications, stating age, qualifications, experience, together with the names of 3 referees, to the Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, within 14 days.

CHESTER. BARROWMORE HOSPITAL, Great Barrow. (205 Beds.) Applications are invited from suitably qualified medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (Male). Salary being £700–£50–£1000 p.a., less £130 p.a. for residence. The Hospital is modern in all respects and contains Regional Thoracic Surgical Unit. Applications from ex-patients considered.

Apply, sending 2 references or names of referees, to Secretary.

CROYDON, SURREY. MAYDAY HOSPITAL. (619 Beds.) SENIOR GYNÆCOLOGICAL AND OBSTETRICAL HOUSE OFFICER required for a period of 6 months in the first instance commencing 1st November, 1953. The post which is resident is not recognised for M.R.C.O.G.

Forms of application obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned by 15th October, 1953.

CROYDON. MAYDAY HOSPITAL. (619 Beds.) House SURGEON. Pre-registration candidates will be considered. Period of 6 months commencing mid-October.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Croydon Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT ANÆSTHETIC REGISTRAR (whole-time) for Group duties mainly at Mayday Hospital (619 Beds) commencing immediately. Candidates must have experience in anæsthetics and possession of D.A. an advantage. Candidates not precluded from visiting Hospital.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned not later than 16th October, 1953.

CROYDON GENERAL HOSPITAL. (200 Beds.) Casualty OFFICER (Senior House Officer grade) for period of 6 months in first instance, commencing mid-October.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Croydon Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

CUCKFIELD HOSPITAL, Cuckfield, Sussex. Mid-Sussex HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for Medical and Postoperative Wards. National Health Service conditions of service. Salary £670 p.a., subject to residential charge of £150 p.a. The post is now vacant.

Applications, stating age, qualifications and experience, and giving the names of 2 referees, should be addressed to the Group Secretary, at the above address.

DARLINGTON MEMORIAL HOSPITAL. Applications are invited from Male or Female practitioners with experience for the post of SURGICAL REGISTRAR (Senior House Officer) which is one of a surgical team of 2 Registrars and 1 House Officer responsible for surgical beds and casualty. The post is recognised for the F.R.C.S.(Eng.). Salary £670 p.a., deduction of £150 p.a. for full residential emoluments. The post is tenable for 12 months and is renewable annually.

Apply with references, stating age and experience, to—
G. W. BECKWITH, Group Secretary.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (resident), which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith.
G. W. BECKWITH, Group Secretary.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) SENIOR HOUSE OFFICER (pædiatrics), vacant 14th October, 1953.

Apply, giving 2 names for reference to the Secretary, Derby No. 1 Hospital Management Committee, Babington-lane, Derby.

DENBIGH (near). LLANGWYFAN HOSPITAL. Clwyd AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female) for appointment of 3 JUNIOR or SENIOR HOUSE OFFICERS at the above Hospital. The Hospital has a total complement of 400 Beds and provides for the treatment of all types of pulmonary and non-pulmonary tuberculosis and also contains a major Thoracic Surgical Unit.

Applications, stating full name, age, nationality professional qualifications, particulars of present and previous hospital appointments, to be addressed to the undersigned, together with the names of 2 referees, to reach him within 14 days from the date of publication of this advertisement.

WILLIAM ROBERTS, Group Secretary.
"Rhianfa," Russell-road, Rhyl, 22nd September, 1953.

DONCASTER. ROYAL INFIRMARY. Sheffield Regional HOSPITAL BOARD. Whole-time REGISTRAR (pathology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th October, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the D.A.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners with the necessary experience for the appointment of RESIDENT ANÆSTHETIST in the grade of Senior House Officer. Salary at the rate of £670 p.a., from which a deduction of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.
Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the F.R.C.S.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SECOND CASUALTY OFFICER (Senior House Officer) at above Infirmary. Salary £670 p.a., from which a deduction at the rate of £130 p.a. will be made for residential emoluments.

Applications, stating age, qualifications, and details of present and previous appointments with dates, and enclosing copies of 3 recent testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.
Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the Fellowship and D.L.O.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the whole-time post of SENIOR HOUSE OFFICER (E.N.T. Department) in accordance with the terms and conditions of service for hospital medical and dental staffs (England and Wales). Salary at the rate of £670 p.a., less £130 p.a. for board, residence, &c.

Applications, stating age, education, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Group Secretary.
Doncaster Royal Infirmary.

DONCASTER. WESTERN HOSPITAL. Doncaster HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER in the grade of Junior Hospital Medical Officer.

Applications, stating age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to the Secretary to the Committee, Doncaster Royal Infirmary.

DEAL. VICTORIA HOSPITAL. Resident Medical OFFICER (Senior House Officer). This post in a modern well-equipped General Practitioner Hospital of 58 Beds offers first class experience for those intending to enter general practice. There is a regular Consultant Visiting Staff for all branches of medicine and surgery. Furnished flat and garage available. Suitable for single, or married man with a family. Salary £670 a year, less deduction for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park-west, Folkestone.

DOVERCOURT, ESSEX. HARWICH AND DISTRICT HOSPITAL. (30 Beds.) Applications invited for appointment of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

DOVER. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital. The post is recognised by the Royal College of Surgeons. Salary £350, £400, or £450 a year according to experience. A deduction of £100 a year will be made for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

DARTFORD HOSPITAL MANAGEMENT COMMITTEE.
SENIOR HOUSE OFFICER (orthopædics and traumatic surgery) at the West Hill Hospital, Dartford.
HOUSE OFFICER (mainly medicine), vacant 1st January, 1954, at the West Hill Hospital, Dartford.
HOUSE SURGEON (orthopædics) at the Southern Hospital, Dartford.
HOUSE OFFICER (E.N.T. and ophthalmology) at the Southern Hospital, Dartford.
Applications, stating age, qualifications, experience, nationality, and the names of 2 persons to whom reference may be made, to be sent for House Officers to the Medical Superintendent of the hospital concerned, and for Senior House Officer to the Group Secretary, Dartford Hospital Management Committee, the Bow Arrow Hospital, Dartford.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—
Corbett Hospital, Stourbridge (106 Beds)
SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.
SENIOR HOUSE OFFICER (resident), surgical, or HOUSE OFFICER (resident), surgical, pre-registration appointment. Post now vacant. Salary at appropriate rate less deduction for residential emoluments.
Wordsley Hospital, near Stourbridge (478 Beds)
SENIOR HOUSE OFFICER (Resident Anæsthetist). Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.
HOUSE OFFICER (resident), surgical, pre-registration appointment. Post now vacant. Salary at appropriate rate, less deduction of £100 p.a. in respect of residential emoluments.
Prestwood Sanatorium (200 Beds)
SENIOR HOUSE OFFICER (resident). Post now vacant. Salary £670 p.a., less £150 p.a. for residential emoluments.
Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER required at above Hospital. Candidates should have held resident appointments in general hospitals and have had special experience in administering anæsthetics. Salary £670 p.a. Deduction of £130 p.a. for board, lodging, &c. Appointment for 6 months in first instance. Post vacant 9th November, 1953.
Applications, together with the names of 2 referees, to Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 17th October, 1953.

ENFIELD. CHASE FARM HOSPITAL, The Ridgeway. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. CLINICAL ASSISTANT to the Consultant in Physical Medicine required for 3 sessions per week, for a minimum period of 6 months, the appointment to be subject to review prior to the expiration of 6 months. The person appointed will work in the department at Chase Farm Hospital, and a small number of beds is available for the work of the department.
Applications, giving full particulars, and naming 2 referees, should be forwarded to the Secretary of the Management Committee, Chase Farm Hospital, Enfield, by 24th October, 1953.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE OFFICER (medical), required 23rd November. Pre-registration post but registered practitioners may apply. 6 months appointment.
Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPSOM, SURREY. HORTON HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGION. PSYCHIATRIC REGISTRAR required. Previous psychiatric experience necessary. Single resident accommodation available. The Hospital deals with all types of psychiatric illness, experience may be gained in all modern physical occupational and psychotherapeutic methods. There is a special unit (Mott Clinic) for the treatment of neurosyphilis. Facilities afforded for attending courses of instruction in London for the D.P.M.
Application forms obtainable from the Secretary, Horton Hospital, Epsom, Surrey, to whom they should be returned, duly completed, not later than 23rd October, 1953.

EPSOM, SURREY. ST. EBBA'S HOSPITAL. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR at above Hospital. The Hospital is principally concerned with the treatment of voluntary cases of good prognosis, has a high turnover of cases, uses all modern treatment methods and has teaching linkages with 2 London training hospitals. There are Outpatient Departments and a Special Unit for juvenile psychiatric cases. Salary, &c., in accordance with the agreed terms and conditions of service of hospital medical and dental staffs. For residents a charge of £3 3s. a week is made for full residential amenities. Candidates may visit the Hospital by appointment with the Physician-Superintendent.
Application forms may be obtained from the Group Secretary, St. Ebba's and Belmont Group Hospital Management Committee, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms (5 copies) should be returned to him within 2 weeks of the appearance of this advertisement.

EDINBURGH NORTHERN HOSPITALS BOARD OF MANAGEMENT. JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics for Leith Hospital, to commence on 16th November. Salary and conditions in accordance with the terms of service issued by Department of Health for Scotland.
Applications, as soon as possible, with names and addresses of 3 referees, to Medical Superintendent, Western General Hospital, Edinburgh, 4.

EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following HOUSE OFFICER appointments which are now vacant for the period ending 31st January, 1954.
Cumberland Infirmary, Carlisle (340 Beds)
1—General Surgery.
1—Orthopædics.
1—"Specials"—(E.N.T. and Eyes).
1—Gynæcology and Obstetrics.
Applications, with names of 2 referees, should be forwarded immediately to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

GLASGOW. HAWKHEAD (MENTAL) HOSPITAL, 510, Crookston-road, GLASGOW, S.W.3. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female). Salary scale £700–£50–£1000 p.a., with appropriate deduction if resident. There is scope for comprehensive experience in all aspects of psychiatry, inpatient and outpatient, and all modern methods of treatment are used. Every endeavour is made to provide the junior medical staff with such extra training facilities in other fields of psychiatry as are required by the D.P.M. examinations.
Applications, with the names of 2 referees, should be forwarded as soon as possible to the Physician-Superintendent, from whom further details can be obtained.

GLASGOW, N. FORESTHALL HOSPITAL. (640 hospital beds for long-term sick.) JUNIOR HOSPITAL MEDICAL OFFICER. Applicants must have been qualified for 2 years and have had experience as House Officers in general hospitals. The present establishment is for 3 Junior Hospital Medical Officers and they are encouraged to spend part of their time at a nearby teaching hospital to maintain their interest in general medicine. Facilities and supervision are also provided for medical officers wishing to pursue clinical research in preparation for higher degrees. Living-in optional.
Applications, with the names of 3 referees, should be sent to the Administrative Medical Officer, Foresthall, 657, Edgefauld-road, Glasgow, N.

GLASGOW, N. STOBHILL GENERAL HOSPITAL. 2 HOUSE PHYSICIANS (resident), Male or Female, required 1st February, 1954, for Psychiatric Unit : 180 Beds, 1000 admissions yearly ; acute treatable cases.
Apply now to Medical Superintendent.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, Dene Side, GREAT YARMOUTH. Vacancy on 1st November, 1953, for RESIDENT MEDICAL OFFICER (Senior House Officer status), Male or Female, for the Medical Unit of the Great Yarmouth and Gorleston Hospital. The Unit comprises 30 beds for acute medical cases, fully equipped to undertake all types of medical treatment and investigations, and it is under the personal direction of a Consultant Physician. The post provides an excellent opportunity for a practitioner reading for a higher medical qualification. Salary £670, less £150 for residence.
Applications, with names of 3 referees, should be sent to the Hospital Secretary, Dene Side, Great Yarmouth.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcological), Male or Female, for duties at the above-named Hospital and Scartho Road Infirmary, Grimsby. The post is now vacant.
Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (229 Beds.) RESIDENT HOUSE SURGEON required. The post is in general surgery and is recognised for the F.R.C.S. examination, tenable for 6 months and approved for pre-registration practitioners. The vacancy will occur on 1st November.
Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. CASUALTY OFFICER required. The grading is that of Senior House Officer, and 2 Casualty Officers are employed who share the work of the department which is part of the Orthopædic and Traumatic Unit. Regular instruction is given in traumatic surgery, and Casualty Officers take part in the work of the fracture clinics. Post vacant now and will be resident for the first 6 months with option of renewal.
Applications, with copies of testimonials, to the Hospital Secretary.

HEMEL HEMPSTEAD, HERTS. WEST HERTS HOS-PITAL. (170 Beds—5 residents.) HOUSE PHYSICIAN to Children's Department required (second or subsequent post). The appointment is recognised for the D.C.H.
Applications, giving details of experience and qualifications, and enclosing copies of 2 recent testimonials, should be sent to the Administrator.

HEMEL HEMPSTEAD, HERTS. WEST HERTS HOS-PITAL. (170 Beds—5 residents.) CASUALTY OFFICER (Junior Hospital Medical Officer). Salary £700–£50–£1000 p.a., less £130 p.a. for residential emoluments. Post vacant mid-October.
Applications, giving full details, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary.

HOVE GENERAL HOSPITAL, Sackville-road, Hove, 3. HOUSE SURGEON AND CASUALTY OFFICER (recognised for F.R.C.S.). Post vacant immediately. Salary and conditions of service in accordance with national scale (£350–£450, less £100 p.a. for residential emoluments).
Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer.

HASTINGS GROUP OF HOSPITALS. Locum Surgical OFFICER (non-resident) required immediately. Salary £16 weekly.
Apply Group Secretary, 11, Holmesdale-gardens, Hastings (phone 5400).

HASTINGS AND ST. LEONARDS. BUCHANAN HOSPITAL. (94 Beds.) SENIOR HOUSE OFFICER required for urology and children's surgery. Post, vacant 20th November, is recognised for F.R.C.S., may be tenable for 6 or 12 months. National scale of salary.

Apply to Hospital Administrator.

HALIFAX AREA HOSPITALS MANAGEMENT COMMITTEE. Applications invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics for duty at Royal Halifax Infirmary (301 Beds) and Halifax General Hospital (425 Beds). Post now vacant.

Applications, to be forwarded to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) SENIOR HOUSE OFFICER in General Surgery required. Post vacant late October. Salary £670 p.a., with deduction of £130 p.a. for residence, &c.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (151 Beds—Recognised by the Royal College of Surgeons and for Pre-registration Service.) Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £350, £400, or £450 p.a., plus grant of £50 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HEREFORD. COUNTY HOSPITAL. (333 Beds.) House OFFICER (general surgery) required.

Applications, with copies of 2 recent testimonials, to be sent to the Medical Superintendent, County Hospital, Hereford.

HEREFORD. BURGHILL HOSPITAL. Applications are invited for the temporary appointment of JUNIOR HOSPITAL MEDICAL OFFICER at the above Psychiatric Hospital. Salary in accordance with terms and conditions of hospital medical staff, £700–£50–£1000 p.a. Residential accommodation can be provided for a single person for which a charge of £150 p.a. will be made, or detached quarters for a married man are available for which a moderate weekly rental will be charged.

Applications, stating full name, age, nationality, qualifications, and experience, together with the names of 2 referees, to the Medical Superintendent, Burghill Hospital, Hereford, immediately.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX (General Acute—81 Beds) invite applications for appointment of RESIDENT HOUSE SURGEON; duties include Casualty Department. 6 months appointment. National Health Service salary and conditions of service.

Applications stating qualifications age &c., with copies of up to 3 recent testimonials or names for reference, to the Hospital Secretary

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX. (Acute general—81 Beds.) Locum RESIDENT SURGICAL REGISTRAR required for period 30th October–9th November, inclusive. Salary £16 per week, less charge for residence at the rate of £140 p.a.

Apply to Hospital Secretary (Telephone: HOUnslow 4448)

HITCHIN. LUTON AND HITCHIN GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to work in the Hitchin area under the direction of the whole-time Consultant Anæsthetist. The appointment, which is vacant 24th November, 1953, offers experience in general surgery, E.N.T., gynæcology and obstetrics, and orthopædics, and is recognised for the D.A. examination.

Applications, stating age, nationality, qualifications, and experience, together with the names and addresses of 3 referees, should be sent immediately to the Medical Director, The Lister Hospital, Hitchin.

ILKLEY (near). THE HOSPITAL, Middleton in Wharfedale, near ILKLEY. (430 Beds.) MIDDLETON AND GRASSINGTON GROUP. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (resident) at the above Hospital for tuberculosis. Experience in tuberculosis essential and some experience in obstetrics desirable. Remuneration £700 rising to £1000 p.a., in accordance with national award, from which will be made an appropriate deduction for full board-residence.

Applications to the Secretary at the above Hospital.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

RESIDENT SURGICAL OFFICER (Senior House Officer grade). Recognised for F.R.C.S.

E.N.T. HOUSE SURGEON (Senior House Officer grade). Recognised for F.R.C.S. and D.L.O.

These posts are available immediately, and applications for ocum appointments will be considered.

Applications, giving age, qualifications and experience, should be submitted to the Hospital Secretary.

HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. (Recognised for D.A.) SENIOR HOUSE OFFICER in Anæsthetics required for duties at various hospitals in the Group. Resident or non-resident. Salary £670 p.a.; if resident, less £130 for residential emoluments. The appointment will be for 12 months in the first instance, but will be terminable at any time by 2 months notice on either side.

Application forms may be obtained from and should be returned as soon as possible to R. J. CARLESS, Group Secretary. Hull Royal Infirmary.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. (143 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum HOUSE SURGEONS required (2).

Applications to the Hospital Secretary, at the above address.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) Applications are invited for the post of SENIOR HOUSE PHYSICIAN. There are 2 Junior House Physicians. Resident post, and vacant at the end of November. Salary £670 p.a., less £130 for emoluments.

Applications to be forwarded to the Secretary, Hull A Group Hospital Management Committee.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department. The post is graded Senior House Officer and is now vacant. The Department has 2 Consultants, about 60 Beds, and a large outpatients attendance and offers a wide experience.

Applications, stating age, nationality, experience, and copies of 3 recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consultant Surgeon. The post is recognised for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, stating age, nationality, experience, and copies of recent testimonials, to the Hospital Secretary.

IVYBRIDGE, SOUTH DEVON. MOORHAVEN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER at Moorhaven Hospital, Ivybridge, South Devon. There are 750 Beds and medical staff of 8. Approximately 500 admissions a year and 3500 psychiatric outpatient attendances at the South Devon Hospital, Plymouth, and Child Guidance Clinic. There are good facilities for postgraduate work for the D.P.M., and personal tuition will be arranged. A house is available suitable for a married man.

Application forms and 1952 Annual Report on application to the Physician-Superintendent.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston-on-THAMES. (534 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of resident Whole-time REGISTRAR (anæsthetics). The appointment will be subject to the provisions of the National Health Service superannuation regulations and becomes vacant in December, 1953.

Forms of application may be obtained from the Group Secretary (a foolscap stamped addressed envelope to be enclosed) and the completed forms returned to the Group Secretary, 35, Coombe-road, Kingston-on-Thames, not later than 14th November, 1953.

KNARESBOROUGH. SCOTTON BANKS HOSPITAL, Ripley-road, KNARESBOROUGH, YORKS. HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER. This is a modern hospital of 306 Beds for the treatment of tuberculosis (adult female patients and children). The salary payable is £670 p.a., subject to a deduction of £140 p.a. in respect of board and lodging.

Applications should be forwarded to—

Dr. V. RYAN, Medical Superintendent.

Scotton Banks Hospital, Knaresborough.

KNARESBOROUGH. SCOTTON BANKS HOSPITAL, Ripley-road, KNARESBOROUGH, YORKS. HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE OFFICER. This is a modern hospital of 306 Beds for the treatment of tuberculosis (adult female patients and children). The salary and conditions of service will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications should be forwarded to—

Dr. V. RYAN, Medical Superintendent.

Scotton Banks Hospital, Knaresborough.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) RESIDENT HOUSE OFFICER (surgical). Successful applicant will work with Consultant Surgical Unit and attend Consultative Clinics. The post is vacant now and normally tenable for 6 months. Recognised as a pre-registration post.

Applications, with names of 2 referees, to the Secretary, Royal Lancaster Infirmary.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) Resident Locum REGISTRAR (anæsthetics) required immediately for approximately 2 months. Remuneration at the rate of £16 per week with a reduction for residential emoluments.

Apply Secretary, Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, naming 2 referees.

LEICESTER ISOLATION HOSPITAL AND CHEST UNIT, Groby-road, LEICESTER. (328 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (medical). Salary £670 p.a., less £150 residential emoluments. The appointment is tenable for 6 months and may extend for a further 6 months. Experience will be gained in chest diseases, including tuberculosis, and also fevers.

Applications, giving age, nationality, and qualifications, &c., and copies of 2 recent testimonials, to be forwarded as soon as possible to the Physician-Superintendent at the above Hospital.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). RESIDENT HOUSE SURGEON (general surgery). Post vacant. Recognised for pre-registration.

Apply to the Hospital Secretary.

LEEDS (near). SCALEBOR PARK HOSPITAL. Burley-IN-WHARFEDALE, near LEEDS. Applications are invited for the post of SENIOR HOUSE OFFICER (Male or Female) at Scalebor Park, a modern hospital of 323 Beds for the active treatment of nervous and mental disorders. The Hospital is associated for teaching purposes with the Department of Psychiatry of Leeds University and facilities will be granted for attending the D.P.M. course. The Salary is £670 p.a., less £130 for full residential emoluments.

Applications to the Medical Superintendent immediately.

LEEDS REGIONAL HOSPITAL BOARD AREA. Medical ACT, 1950. RESIDENT HOUSE OFFICER posts. Recognised pre-registration house posts will be available for the 6 months commencing 1st November, 1953, in the following hospitals approved under the Medical Act, 1950. Preference will be given to pre-registration candidates, but applications will also be accepted from practitioners registered before 1st January, 1953.

Scarborough Hospital (191 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).
1 General Surgical.
County Hospital, York (222 Beds)
2 Surgical (general surgery and gynæcology)
1 Medical.
Hull Royal Infirmary and Sutton (242 Beds)
1 Surgical (general surgery and gynæcology).
1 Surgical (E.N.T.).
1 Surgical (ophthalmology).
1 Medical.
Kingston General Hospital, Hull (398 Beds)
1 Surgical (general surgery, gynæcology and orthopædic).
Victoria Children's Hospital, Hull (143 Beds)
1 General Surgical.
1 Surgical (general surgery and orthopædic).
Westwood Hospital, Beverley (202 Beds)
1 Surgical (orthopædic).
East Riding General, Driffield (249 Beds)
1 Medical.
Pontefract General Infirmary (89 Beds)
1 General Surgical.
Clayton Hospital, Wakefield (200 Beds)
1 Surgical (general surgery, orthopædic and gynæcology).
1 Medical (general medical, pædiatric and ophthalmology).
1 Mixed (general medical, general surgery and dermatology).
General Hospital, Wakefield (158 Beds)
1 Medical (general medical and pædiatric).
Pinderfields General, Wakefield (663 Beds)
1 General Surgical.
1 Surgical (orthopædic).
1 Medical.
1 Medical (neurology).
General Hospital, Batley (99 Beds)
1 Surgical (orthopædic and ophthalmology).
General Hospital, Dewsbury (119 Beds)
1 Medical (general medical, pædiatric and dermatology).
Staincliffe General, Dewsbury (314 Beds)
1 Surgical (general surgery, orthopædic and E.N.T.).
Huddersfield Royal Infirmary (304 Beds)
1 General Surgical.
1 Surgical (midwifery and gynæcology).
Royal Halifax Infirmary (301 Beds)
1 Surgical (ophthalmology and E.N.T.).
2 Medical.
Halifax General Hospital (425 Beds)
1 General Surgical.
1 Medical.
1 Midwifery.
Bradford Royal Infirmary (507 Beds)
1 Surgical (general surgery and urology).
1 Surgical (orthopædic and casualty).
1 Medical.
St. Luke's Hospital, Bradford (828 Beds)
1 General Surgical.
1 Medical.
Bradford Children's Hospital (101 Beds)
1 Medical (pædiatric).
Keighley Victoria Hospital (144 Beds)
1 Surgical (general surgery, gynæcology and E.N.T.).
1 Surgical (general surgery and orthopædic).
General Hospital, Otley (170 Beds)
1 Medical (general medical and pædiatric).
St. James's Hospital, Leeds (1539 Beds)
3 General Surgical.
1 Surgical (gynæcology).
7 Medical.
1 Medical (geriatrics).
1 Medical (pædiatric).
1 Medical (dermatology).
St. Mary's Hospital, Leeds (216 Beds)
1 Midwifery.

Candidates should express, where applicable, their preference for medical, surgical, or midwifery posts within the same hospital on the application form.

Candidates wishing to apply for posts at more than 1 hospital should complete a separate form in respect of each hospital.

Application forms can be obtained from the Senior Administrative Medical Officer, Leeds Regional Hospital Board, Park-parade, Harrogate, or from the Dean, The School of Medicine, Thoresby-place, Leeds, 2, and should be returned to either of the above-named as soon as possible. Application may be made in advance of results of final examinations.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of General Medicine, General Surgery and Psychiatry.

Suitably experienced practitioners interested in such appointments are invited to communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics
Halifax Group (resident).

General Medicine
Halifax Group (non-resident). Duties divided between general medicine and geriatrics.

General Surgery
(*a*) Dewsbury, Batley and Mirfield Group (resident).
(*b*) Halifax General Hospital (resident).
(*c*) Keighley and District Victoria Hospital (resident/non-resident).

Infectious Diseases
Leeds Road Hospital, Bradford (resident).

Obstetrics and Gynæcology
Post alternates (6 month periods) between St. Mary's Hospital, Leeds (109 obstetric beds), and St. James's Hospital, Leeds, 9 (74 obstetric and 52 gynæcological beds). (Resident.) Recognised for the M.R.C.O.G.

Orthopædic Surgery
Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (non-resident).

Thoracic Surgery
Pinderfields General Hospital, Wakefield. Experience in thoracic surgery desirable. 53 Beds under the Consultants to the Teaching Hospital. Single accommodation available.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 23rd October, 1953.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of RESIDENT MEDICAL OFFICER, at the General Infirmary at Leeds. The post is of Registrar status and will be for 1 year in the first instance.

Applications, stating age, qualifications, previous posts with dates, together with the names of 3 referees, to be forwarded not later than 31st October, 1953, to the Sub-Dean, School of Medicine, Leeds, 2.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of JUNIOR RESIDENT ANÆSTHETIC OFFICER at the General Infirmary. The post is of House Officer status and will be for a period of 6 months.

Applications, stating age, qualifications, previous posts with dates, together with the names of 3 referees, should be forwarded to the undersigned as soon as possible.

S. CLAYTON FRYERS, Secretary to the Board.
General Infirmary, Leeds, 1.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of REGISTRAR in the Department of Radiodiagnosis at the General Infirmary at Leeds. The post, which is non-resident, will be for 1 year in the first instance. Candidates must hold a Diploma of Radiology and preference will be given to those possessing higher qualifications in medicine or surgery.

Applications, stating age, qualifications, previous posts with dates, together with the names of 3 referees, should be forwarded not later than 31st October, 1953, to the Sub-Dean, School of Medicine, Leeds, 2.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment will be for the period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £670 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LOUTH, LINCS. COUNTY INFIRMARY. (200 Beds.) (Recognised training hospital for F.R.C.S.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (surgical) now vacant. Salary £670 p.a., less £150 for residential emoluments.

Applications, giving full particulars, with names of 2 referees, should be addressed to the Hospital Secretary.

LOUTH, LINCS. COUNTY INFIRMARY. (200 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON now vacant. The post is recognised for the F.R.C.S. examination and Pre-registration Service.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

LLANELLY HOSPITAL. (164 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER for work in the Surgical Unit, and with duties in the Casualty Department of the above Hospital.

Full particulars, stating age, qualifications and experience, should be addressed to the undersigned.

O. C. HOWELLS, Group Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for temporary posts as CASUALTY OFFICERS (House Officer grade) for the period to 28th February, 1954, at :—

Royal Southern Hospital.
Royal Liverpool Children's Hospital.

The posts are open to registered practitioners (resident or non-resident) and to pre-registration applicants.

Apply as soon as possible with full details to the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL ROYAL INFIRMARY. Applications are invited for a post of SENIOR HOUSE OFFICER in Orthopædics for the period to 30th September, 1954.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post as REGISTRAR in Orthopædics for the period 1st January–31st December, 1954. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 24th October, 1953, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for temporary posts as ORTHOPÆDIC HOUSE SURGEONS, at :—

David Lewis Northern Hospital,*
Royal Liverpool Children's Hospital,

for the period to 28th February, 1954. The posts are open to registered practitioners and pre-registration applicants. The person appointed to the post marked * will be required to undertake some casualty work as part of his normal duties.

Apply as soon as possible with full details to the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL, 20. BOOTLE HOSPITAL. (119 Beds.) The following appointments are vacant :—

Medicine. 1 HOUSE OFFICER.
Surgery. 1 SENIOR HOUSE OFFICER.
1 HOUSE OFFICER.

Applications to Secretary, Walton Hospital, Liverpool, 9.

LYMINGTON HOSPITAL, Lymington, Hants. (107 Beds.) RESIDENT SENIOR HOUSE OFFICER (medical) required immediately.

Applications with copies of testimonials, to be submitted as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

LUTON, BEDS. CHILDREN'S ANNEXE, LUTON AND DUNSTABLE HOSPITAL. Applications are invited for the post of RESIDENT PÆDIATRIC HOUSE OFFICER, vacant 1st November, 1953. The Annexe is recognised for the D.C.H., and duties will cover both the medical and surgical wards. The appointment is normally a second or third post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, should be sent immediately to the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds.

LUTON AND HITCHIN GROUP OF HOSPITALS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. PÆDIATRIC REGISTRAR (resident or non-resident) required for the above Group of hospitals. Principal duties will be at Children's Annexe of Luton and Dunstable Hospital but there are duties at other hospitals in the Group. Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 20th October, 1953.

MARKET DRAYTON (near), SALOP. CHESHIRE JOINT SANATORIUM. (305 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer, according to experience). Post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

MANSFIELD AND DISTRICT GENERAL HOSPITAL. (207 Beds.) MANSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (pre-registration or Senior House Officer post). Post recognised for F.R.C.S. examinations.

Applications, stating age and qualifications, together with copies of 2 recent testimonials, to be forwarded to Group Secretary, Mansfield Hospital Management Committee, Crow Hill-drive, Mansfield.

MANSFIELD. RANSOM SANATORIUM. Nottingham NO. 5 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER with effect from 1st November, 1953. The Sanatorium contains 185 Beds for the treatment of pulmonary tuberculosis in men, women, and children, including a modern Thoracic Surgery Unit. Salary £670 p.a., less £150 for full residential emoluments, which include a comfortable flat.

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, to be sent to the Group Secretary, Harlow Wood Hospital, near Mansfield.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—426 Beds.)

1 SENIOR HOUSE OFFICER (general surgery). Post now vacant.
1 HOUSE OFFICER (E.N.T. surgery). (Pre-registration.) Post now vacant.

Posts recognised for F.R.C.S. examination.
Forms from Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to the Department of Hæmatology, to commence as soon as possible. Whole-time appointment for 12 months, renewable. The post is mainly clinical in character, involving ward and general outpatient clinic duties. Higher qualifications would be an advantage but are not essential.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 31st October, 1953.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to a General Medical Unit, to commence as soon as possible. Whole-time non-resident appointment, for 12 months, renewable. Applicants must possess higher qualifications.

Applications to be made on forms obtainable from the under signed and to be returned not later than 31st October, 1953.

G. H. TAYLOR, Secretary.

MANCHESTER ROYAL EYE HOSPITAL. United Man-CHESTER HOSPITALS. Applications are invited for RESIDENT MEDICAL STAFF (Senior House Officer grading). Salary £670 p.a., less £130 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER REGIONAL HOSPITAL BOARD and the BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS invite applications for the post of SENIOR REGISTRAR in Diagnostic Radiology. The person appointed will be required to undertake duties at the Christie Hospital and Holt Radium Institute, Manchester, and at the United Manchester Hospitals (Manchester Royal Infirmary, &c.). D.M.R.D. essential.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, to be received by 26th October, 1953.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of RESIDENT MEDICAL REGISTRAR to Macclesfield and District Group Hospital, main duties West Park Branch, Macclesfield Hospital.

Apply immediately to Group Secretary, "Willerby House," Cumberland-street, Macclesfield, enclosing copies of 2 recent testimonials.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR (resident or non-resident) in E.N.T. Surgery to the Wigan and Leigh Group of hospitals, with main duties at the Royal Albert Edward Infirmary, Wigan.

Application should be made immediately to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, together with the names of 2 referees.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of Whole-time REGISTRAR in Diagnostic Radiology to the West Manchester Hospital Management Committee. Primarily for duty at Park Hospital, Davyhulme, but with duties at other Group Hospitals. Resident or non-resident, post vacant 31st December, 1953. 12 months appointment subject to renewal.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Anæsthetics (resident or non-resident). Recognised for the D.A. regulations.

Apply, giving names of 2 referees, to the Group Secretary, Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in General Surgery at Leigh Infirmary, Leigh. Applicants must have had surgical experience and preferably hold a higher surgical qualification. The person appointed will be required to perform duties of Resident Surgical Officer at the Hospital (102 acute general beds). Post recognised for the F.R.C.S. examinations.

Applications, together with the names of 2 referees, should be sent to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

MANCHESTER REGIONAL HOSPITAL BOARD. North AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (chest diseases) required to carry out duties arranged by the Consultant Chest Physician at the Altrincham, Northwich, Crewe Chest Clinics and Hefferston Grange Sanatorium.

Applications, together with 2 recent testimonials, should be sent to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of SENIOR REGISTRAR in Obstetrics and Gynæcology to the South Manchester Group of hospitals, with main duties at Withington Hospital. Arrangements may later be made for the successful applicant to be transferred to the United Manchester Hospitals (St. Mary's Hospitals) to continue training.

Forms of application may be obtained from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, to be received by 28th October, 1953.

MANCHESTER. BAGULEY HOSPITAL, Wythenshawe. (Tuberculosis and Chest Surgery—402 Beds.) SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (medical) at the above Hospital. The appointment offers the opportunity to gain a wide experience in the diagnosis of chest diseases and of the treatment, both medical and surgical, of respiratory tuberculosis.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to be forwarded to the undersigned within 7 days of the appearance of this advertisement.

A. H. KEATES, Secretary to the Committee.
Withington Hospital, Manchester, 20.

MOTHERWELL, HAMILTON AND DISTRICT HOS-PITALS BOARD OF MANAGEMENT. CLELAND HOSPITAL, LANARKSHIRE. (180 Beds, mostly geriatrics.) Applications are invited for the following post within this Hospital of JUNIOR HOSPITAL MEDICAL OFFICER (resident). Salary £700–£50–£1000, less £150 residential emoluments.

Applications to Medical Superintendent, Cleland Hospital, Lanarkshire.

MANCHESTER. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER (anæsthetics). The post is recognised for the D.A. and the successful candidate will have the opportunity of experience at Withington, Wythenshawe, and Christie Hospitals.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the undersigned immediately. A. H. KEATES, Secretary.

Withington Hospital, Manchester, 20.

MAIDSTONE. PRESTON HALL HOSPITAL, British LEGION VILLAGE, MAIDSTONE, KENT. Applications are invited for the appointment of SENIOR HOUSE OFFICER. Salary £670 p.a., national scale and conditions. The sanatorium contains 330 Beds for the treatment of tuberculosis and the duties of the post will consist of acting as House Surgeon to the Thoracic Surgical Unit.

Applications, stating age, qualifications, and names of 2 referees, to be sent by not later than 31st October, 1953, to—

A. A. HOWICK, Secretary to the Management Committee.

MAIDSTONE (near). LENHAM SANATORIUM. (172 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER at Lenham Sanatorium, near Maidstone. The Sanatorium has 172 Beds for the treatment of pulmonary tuberculosis. Salary £670 a year, with a deduction of £150 a year for residential emoluments. Appointment for 12 months.

Applications to Physician-Superintendent, Lenham Sanatorium, near Maidstone.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. There are 55 E.N.T. Beds and 6 specialist operating sessions each week. Valuable experience is available and the post is recognised for the purposes of the F.R.C.S. and the D.L.O. Salary will be £670 a year less £150 a year for residential emoluments.

Applications immediately to the Administrative Office, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON. Post recognisable for the F.R.C.S.(Eng.). Salary £670 a year, with deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MORECAMBE. QUEEN VICTORIA HOSPITAL. (100 Beds.) SENIOR HOUSE OFFICER (casualty). Post vacant November and normally tenable for 1 year. Successful applicant will be attached to the specialist Orthopædic Unit.

Applications, with names of 2 referees, to be addressed to the Secretary, Royal Lancaster Infirmary, Lancaster.

MORECAMBE. QUEEN VICTORIA HOSPITAL. (100 Beds.) SENIOR HOUSE OFFICER (surgical). The successful applicant will work with a Consultant Surgical Unit and attend at Consultative Clinics. The post is vacant now and normally tenable for 1 year.

Applications, with names of 2 referees, to be addressed to the Secretary, Royal Lancaster Infirmary.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR REGISTRAR and REGISTRAR ANÆSTHETISTS (whole-time) at Newcastle General Hospital (861 Beds including 310 surgical beds) and allied hospitals. Appointments up to 31st August, 1954, in the first instance and may be renewed for further periods. Respective scales of salary £1000–£1300, and £775–£890 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, not later than 20th October, 1953.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time appointment of SENIOR HOUSE OFFICER in the Department of Anæsthetics at the Royal Victoria Infirmary. The post is subject to Ministry of Health terms and conditions of service and will be non-resident except for rotational emergency duty. It offers the opportunity to study for the F.F.A.R.C.S. Applicants should have held postgraduate appointments in medicine and surgery, but previous experience in anæsthetics is not essential.

Applications, giving full details, with the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. OBSTETRICAL HOUSE SURGEON (70 Beds). The above post (resident) becomes vacant on 1st November, 1953. Consideration may be given to the possibility of alternating this post with that of the Gynæcological House Surgeon. The post of Obstetrical House Surgeon is recognised for the purpose of Pre-registration Service and applications will be accepted from students who are on the point of taking their qualifying examinations. The department is recognised for the Diploma of M.R.C.O.G., and D.Obst. R.C.O.G., and undertakes the training of Medical Students in the University of Durham.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials by 24th October, 1953.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (Chest Unit). The above resident post becomes vacant on 1st November, 1953, and is tenable for 1 year.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 17th October, 1953.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (Orthopædic Department), which is now vacant. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 17th October, 1953.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. Whole-time RESIDENT MEDICAL OFFICER with general duties required at Senior House Officer rate of salary. This post offers excellent experience to anyone preparing to enter general practice. The Hospital has a busy Outpatient Department. Appointment for 1 year in first instance.

Apply to Secretary, General Hospital, Nottingham, giving age, nationality, qualifications and present and previous appointments and names of 3 referees.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Surgery. Salary £670 p.a. Applications are invited from registered medical practitioners.

HOUSE SURGEON. Post approved for Pre-registration Service. National salary scale and conditions. Vacant now.

Applications, stating age, nationality, qualifications, and experience together with the names of 2 referees, to be sent as soon as possible to Group Secretary, Hospital Management Committee Headquarters, Clatterford House Carisbrooke, I.W.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (365 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN. Post approved for Pre-registration Service. National salary scale and conditions. Vacant 1st December, 1953.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 referees, to be sent to the Group Secretary, Hospital Management Committee Headquarters, Clatterford House, Carisbrooke, I.W., as soon as possible.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (259) Beds.) (Recognised for D.A. and F.F.A. R.C.S.) Applications are invited for the post of SENIOR HOUSE OFFICER in Anæsthesia (non-resident). The successful candidate will receive a thorough training in the specialty and previous experience is not essential. Post based at this Hospital, but will attend neighbouring hospital as well with Consultants. Extensive experience in anæsthesia available.

Write, quoting 2 referees, to T. A. JONES,
64, Cardiff-road, Newport, Mon.

NOTTINGHAM CITY HOSPITAL AND SKIN CLINIC. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (dermatology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th October, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM. CITY HOSPITAL. (823 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant immediately. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of ORTHOPÆDICAND FRACTURESENIORHOUSEOFFICER. The post offers exceptional experience in traumatic and orthopædic surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary.

NORWICH. HELLESDON HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER. This Mental Hospital of 1100 Beds. including a separate Neurosis Unit, serves 3 Outpatient Departments and 1 Child Guidance Clinic and maintains Occupational Therapy, E.E.G., Social Workers, and Clinical Psychologist Departments. Salary £670 p.a. A flat would be available for a married man at a rental of £1 per week.

Applications, with names and addresses of 2 referees, to the Medical Superintendent.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.)
Vacancies for :—

SENIOR HOUSE OFFICER or HOUSE OFFICER (Casualty Department).

FRACTURE AND ORTHOPÆDIC HOUSE OFFICER. Recognised for F.R.C.S.

HOUSE OFFICER (general surgery). Recognised for F.R.C.S.

HOUSE OFFICER (Anæsthetics Department). Recognised for D.A.

Appointments to 31st March, 1954, in first instance. Deduction £100 a year for residential emoluments.

Applications, enclosing 3 testimonials, as soon as possible to S. G. HILL, Superintendent.

NEWTON ABBOT HOSPITAL. (General Section—65 Beds.) RESIDENT HOUSE SURGEON (Male or Female) required immediately. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

NUNEATON. GEORGE ELIOT HOSPITAL. (289 Beds.) SENIOR HOUSE OFFICER or HOUSE OFFICER (general medicine) required (50 acute beds). Pre-registration candidates may apply.

Applications to the Hospital Secretary

NUNEATON. MANOR HOSPITAL. (139 Beds.) House SURGEON required for general surgical duties including E.N.T. and ophthalmic work. Recognised for F.R.C.S. and pre-registration.

Applications to the Hospital Secretary.

NUNEATON. MANOR HOSPITAL. (139 Beds.) House PHYSICIAN (32 general medical beds), vacant now. Pre-registration post.

Applications to the Hospital Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the post of Transitional SENIOR REGISTRAR in General Surgery at Northampton General Hospital. Post is reserved for a Surplus Senior Registrar (vide page 243 B.M.J., 23rd May, 1953), tenable for 1 year in the first instance.

Applications on forms obtainable from Secretary, Registrar Committee, to reach him by 24th October, 1953.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of REGISTRAR in Thoracic Surgery, Churchill Hospital. Unit consists of House Surgeon, Registrar, and 2 Consultants. Post suitable for candidates for M.R.C.P. or F.R.C.S.

Application forms obtainable from Administrator, Radcliffe Infirmary, Oxford.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the whole-time post of NON-RESIDENT REGISTRAR in Paediatrics. The appointment will be for 1 year and will be eligible for extension for a second year.

Applications on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford should reach him by 30th October, 1953.

PENZANCE. WEST CORNWALL HOSPITAL. (100 general beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration graduates or qualified medical practitioners for the post of HOUSE SURGEON.

Applications, stating age, nationality, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be forwarded to the Hospital Secretary, West Cornwall Hospital, Penzance.

PENZANCE. WEST CORNWALL HOSPITAL. (100 Beds—3 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required. Post vacant now. Good and varied experience in diagnosis, treatment and operative procedure.

Applications, stating age, experience and nationality, to the Hospital Secretary, West Cornwall Hospital, Penzance.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications are invited from registered medical practitioners for the appointments of :—

(1) SENIOR HOUSE OFFICER in Surgery, Devonport Section, recognised for the Fellowship of the Royal College of Surgeons, vacant 8th December, 1953.

(2) HOUSE SURGEON, Devonport Section, vacant 1st December, 1953.

(3) PÆDIATRIC HOUSE PHYSICIAN, Freedom Fields Section, vacant 1st January, 1954, recognised for the D.C.H.

(4) HOUSE PHYSICIAN, Freedom Fields Section, vacant 1st January, 1954.

(5) HOUSE SURGEON, Freedom Fields Section, vacant 1st January, 1954, recognised for the Fellowship of the Royal College of Surgeons.

(6) SENIOR HOUSE OFFICER to Casualty and Fracture Department, Greenbank Road Section, vacant immediately.

(7) HOUSE PHYSICIANS (2 posts), Greenbank Road Section, both vacant 1st January, 1954.

(8) HOUSE SURGEON, Greenbank Road Section, vacant October, 1953, recognised for the Fellowship of the Royal College of Surgeons.

(9) RESIDENT ANÆSTHETIST, Greenbank Road Section, vacant immediately, recognised for the D.A.

Applications, stating age, nationality, qualifications and experience, with the names of 3 referees, to be sent to the undersigned as soon as possible.

ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank Road. Applications invited from registered dental practitioners for the appointment of RESIDENT DENTAL HOUSE SURGEON, vacant 21st November, 1953. This appointment is recognised by the Royal College of Surgeons as fulfilling the requirements of candidates for the Fellowship of Dental Surgery.

Applications, stating age, nationality, and experience, together with copies of 3 recent testimonials, should be sent to—

ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointment :—

Queen Alexandra Hospital (with 126 surgical beds)
SENIOR HOUSE SURGEON.

Applications, stating age, experience and qualifications, and names of 2 referees, should be submitted as soon as possible to—
35, Grove-road South, Southsea. E. H. HURST.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. INFECTIOUS DISEASES HOSPITAL. (310 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER, whose work will comprise duties in both infectious diseases and tuberculosis wards.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—
35, Grove-road South, Southsea. E. H. HURST.

PORTSMOUTH. QUEEN ALEXANDRA HOSPITAL. (War Pensioners Unit—104 Beds.) SENIOR HOUSE OFFICER (medical). Post now vacant. National Health Service salary £670, with a deduction for residential emoluments.

Application forms will be provided on request to Hospital Management Branch, Ministry of Health, Norcross, Blackpool, Lancs.

PONTEFRACT GENERAL INFIRMARY. Resident CASUALTY OFFICER required. Graded as Senior House Officer. Salary £670, less £130 for emoluments. Recognised for Fellowship.

Applications to the Secretary, Pontefract and Castleford Hospital Management Committee, Gt. Northern House, Salterrow, Pontefract.

POOLE GENERAL HOSPITAL. Bournemouth and EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer) required immediately. Hospital recognised for the D.A. and F.F.A.R.C.S.

Applications to the Hospital Secretary.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth and East Dorset Hospital Management Committee. 2 HOUSE SURGEONS (pre-registration) required. Posts vacant on 7th November, 1953, and 14th December, 1953, respectively. The Hospital is recognised for the F.R.C.S. and F.R.C.S.E.

Applications to the Hospital Secretary.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical). This is the senior resident post. 2 House Surgeons and a House Physician also resident. Salary £700–£50–£1000, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES.
64, Cardiff-road, Newport, Mon.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department). Duties (which include casualty work) at Royal Berkshire Hospital (403 Beds) and Battle Hospital (343 Beds). Person appointed will work with Registrar and House Officer.

Applications, stating age, nationality, present post, qualifications with dates, together with names of 2 referees, to the Group Secretary, 3, Craven-road, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited for the appointment, House Officer grade, of RESIDENT ASSISTANT PATHOLOGIST, vacant 16th October, for period 6 months. Previous experience in pathology unnecessary.

Applications, with full particulars, and copies of recent testimonials to Secretary.

REDRUTH. CAMBORNE-REDRUTH HOSPITAL, West CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration graduates or qualified medical practitioners for an appointment of HOUSE SURGEON to the Obstetric and Gynæcological Departments, commencing on 1st January, 1954. This Hospital is recognised for the M.R.C.O.G. in Obstetrics.

Applications, stating age, experience, qualifications, and nationality, together with copies of 3 testimonials, should be submitted to the Hospital Secretary, Camborne-Redruth Hospital, Redruth, by 17th October,

REDRUTH. CAMBORNE-REDRUTH HOSPITAL. (151 Beds—4 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required for the above Hospital. Post now vacant. This is a general hospital with a great variety of cases. The post gives good experience in diagnosis, operative and postoperative treatment, and in actual operative procedure to the candidate.

Applications, stating age, experience and nationality, together with references, to Hospital Secretary, Camborne-Redruth Hospital, Redruth, Cornwall.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL, SURREY. (576 Beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (anæsthetics). To commence duty 1st November. Appointment recognised for D.A. Salary £670 p.a., less £130 for residence, &c.

Apply to Group Secretary at above address.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL, SURREY. (576 Beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE PHYSICIAN, vacant 25th October. Approved pre-registration post.

Apply Group Secretary, at above address.

ROCHDALE. BIRCH HILL HOSPITAL. (General—951 Beds.) ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). Appointment for 1 year and post recognised for D.A.

Applications to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, not later than 17th October, 1953.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in Pathology in this large General Hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials or names of referees, should be sent immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CASUALTY OFFICER (Senior House Officer) for a period of 12 months from 16th December.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Ophthalmology for duties at the Victoria Infirmary and Southern General Hospital, Glasgow.

SENIOR REGISTRAR in Ophthalmology based at the Ophthalmic Institution, Glasgow.

REGISTRAR in Psychiatry based at the Southern General Hospital, Glasgow.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 19th October, 1953.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following non-resident posts at the Royal Hospital, Sheffield :—

(*a*) SENIOR REGISTRAR in General Medicine.

(*b*) SENIOR REGISTRAR in Ophthalmology.

The above appointments are for 1 year in the first instance and will be reviewed annually. It has been agreed in principle between the Board of Governors of the United Sheffield Hospitals and the Sheffield Regional Hospital Board that the appointments, if extended to the full period of 4 years, will be divided, if circumstances permit, between the Royal Hospital and hospitals in the Region.

(*c*) REGISTRAR in Orthopædics.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1. The closing date for applications for post (*a*) is 17th October, and for post (*b*), 24th October, whilst applications for post (*c*) should be sent at once.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR in Chest Diseases required for the Nottingham Chest Service. Duties include sessions at the Nottingham and District Chest Centre, Basford Sanatorium, the Thoracic Surgical Unit at Nottingham City Hospital, and Nottingham No. 2 Mass Radiography Unit. Appointment for 1 year in the first instance, reviewable annually.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, and naming 3 referees, to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th October, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR in Radiology required. The successful candidate will be appointed primarily to the City General Hospital, Sheffield, but will, by agreement with the Board of Governors of the United Sheffield Hospitals, take part in a scheme whereby he and the Senior Registrars in Radiology at the Teaching Hospitals exchange duties for varying periods. The duties will also involve sessions at the Barnsley Hospitals. The appointment is for 1 year in the first instance, reviewable annually.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10, to arrive not later than 19th October, 1953.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Resident Locum SURGICAL REGISTRAR required immediately at the Newark Hospital, Newark-on-Trent. Remuneration at rate of £16 per week, less £2 17s. 8d. per week for residential emoluments.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised training hospital for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 19th October, 1953, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for the D.A.) Applications are invited from suitably qualified practitioners, Male or Female, for the resident appointment of SENIOR HOUSE OFFICER in Anæsthetics, now vacant. The post offers a wide experience in anæsthesia for general surgery, obstetrics, and gynæcology and in the Departments of Urology and Thoracic Surgery.

Applications, giving full details of age, nationality, qualifications, present and previous appointments with dates, and names of 2 persons to whom reference may be made, should be forwarded to the undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from general registered practitioners (Male or Female) for the appointment of RESIDENT HOUSE SURGEON in General Surgery. Vacant immediately, and tenable in the first instance for 6 months. Recognised for the F.R.C.S., and approved for Pre-registration Service. Salary and conditions of service in accordance with national scale.

Applications with references, should be sent to—

J. P. MALLETT, Group Secretary,
Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 27th July, 1953.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). The successful applicant will be allowed to attend for 2 days a month at The Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study with the Consultant. The post is recognised under the revised Fellowship regulations in respect of the 6 months training required of candidates for the Final Fellowship examination.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to—

J. P. MALLETT, Group Secretary,
Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 10th July, 1953.

SHREWSBURY. ROYAL SALOP INFIRMARY. Shrewsbury GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female) for the post of SENIOR HOUSE OFFICER or HOUSE OFFICER (pædiatric), to take charge of the Royal Salop Infirmary Children's Unit (70 Beds), under the Consultant Pædiatrician. Vacant 12th October, 1953. The Unit consists of medical, surgical, and fever beds.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to the Group Secretary, Shrewsbury Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

22nd August, 1953. J. P. MALLETT, Group Secretary.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade). Post recognised under the conditions of the F.F.A.R.C.S. examination, and now vacant.

Applications, stating age, nationality, qualifications, and previous experience, together with copies of recent testimonials, should be sent to the Group Secretary, Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury, 12th September, 1953.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T.) vacant immediately. Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O. R.C.S.

Applications, stating age, qualifications, nationality, and experience, together with copies of recent testimonials, should be sent to J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury, 24th September, 1953.

SLOUGH. UPTON HOSPITAL. North West Metropolitan REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident) required at above Hospital. Post recognised for D.A. Approximately 60% of the duties will be performed at Upton Hospital and 40% shared between other hospitals in the Group. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 16th October.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Chest Diseases to fill a vacancy in the approved trainee establishment at the Bromley Group of hospitals, for duty mainly at the Bromley and Penge Chest Clinics. Candidates must have had good experience in general medicine and in the diagnosis and treatment of pulmonary tuberculosis in adults. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 24th October, 1953.

SOUTHAMPTON CHEST HOSPITAL. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR to the Thoracic Surgical Unit of the above Hospital. This Unit comprises 80 surgical beds and is very active in all branches of thoracic surgery. Candidates need not have had any previous experience in thoracic surgery, but it is essential that they should have had experience in general surgery. If desired the Hospital may be visited by prior arrangement.

Application forms may be obtained from the undersigned, to whom they should be returned when completed, by not later than 24th October, 1953.

FRANK JENNINGS, Group Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Pre-registration appointments. HOUSE OFFICER (obstetrics and gynæcology) required. 2 posts vacant shortly. Recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Detailed applications, with copy testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (pædiatrics) required. Recognised pre-registration post.

Detailed applications, with copy testimonials, should be forwarded to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (orthopædics) required, vacant now. Post recognised for F.R.C.S.

Applications, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

ST. ALBANS, HERTS. NAPSBURY MENTAL HOSPITAL. Applications are invited for the posts of 2 SENIOR HOUSE OFFICERS, appointments to commence immediately. Previous experience as House Physician or House Surgeon essential. Previous psychiatric experience desirable but not essential. Regular clinical case conferences, good psychiatric library and other training facilities. Salary £670 p.a. Residential accommodation is available, if required, for which a charge will be made. No married quarters.

Applications, with references or testimonials, to be sent not later than 20th October, 1953, to the Medical Superintendent (Telephone: Bowmansgreen 2181).

ST. HELENS. ECCLESTON HALL HOSPITAL. (75 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital. The person appointed will work under the supervision of the Consultant Chest Physician for the Group. There are 75 Beds and the work comprises all types of tuberculosis. Good residential accommodation for a single person, male or female, is available.

Applications to be forwarded to—
N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot.

ST. HELENS HOSPITAL, Marshalls Cross-road, St. HELENS. (196 Beds.) Applications are invited for the appointment of RESIDENT HOUSE SURGEON.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to—
N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot.

ST. HELENS HOSPITAL. (196 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER to act as Casualty Officer. The appointment will be subject to annual review.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to—
N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot.

SWINDON. VICTORIA HOSPITAL. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER (anæsthetics) for the Swindon hospitals. Post is recognised for the D.A. Approved salary, conditions, &c.

Apply Secretary, Swindon and District Hospital Management Committee, 7, Okus-road, Swindon.

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), Male or Female. Recognised for D.A. Post now vacant. Duties mainly at the General Infirmary, Stafford, which is the main and acute general hospital of the Group.

Applications, with copies of 3 testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOCKPORT. STEPPING HILL HOSPITAL. (464 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Surgical Officer). The post is recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, forthwith.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Surgical Department.

Applications, stating age, qualifications and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Group Secretary.

SWANSEA. MOUNT PLEASANT HOSPITAL. (276 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER (Female) for work in the Medical and Surgical Departments, and in the Chronic Sick Wards of the above Hospital.

Applications, stating age, experience, and qualifications, should be addressed to the undersigned.
O. C. HOWELLS, Group Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) **Glantawe Hospital** MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the posts (2) of RESIDENT ANÆSTHETISTS (Senior House Officer grade). The Hospital is recognised under the D.A. regulations.

Applications, stating age, qualifications and experience, should be addressed to— O. C. HOWELLS, Group Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) **Glantawe Hospital** MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident post of SENIOR HOUSE OFFICER in the E.N.T. Department of the above Hospital. The Hospital is recognised under the regulations of the F.R.C.S. (E.N.T.) and the D.L.O.

Applications, stating age, qualifications and experience, should be forwarded to O. C. HOWELLS, Group Secretary.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) **Glantawe Hospital** MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the non-resident appointment of SENIOR HOUSE OFFICER in the Orthopædic Department of Swansea Hospital. The Hospital is recognised for Part II of the Diploma in Physical Medicine.

Applications, stating age, qualifications and experience, should be addressed to— O. C. HOWELLS, Group Secretary,
Glantawe Hospital Management Committee.
Swansea Hospital, St. Helen's-road, Swansea.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. RESIDENT SURGICAL REGISTRAR required at above Hospital, which may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 23rd October.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required for post vacant 22nd November. Preference given to persons seeking pre-registration post under Medical Act, 1950.

Applications, stating age, qualifications, with dates, &c., together with copies of 2 testimonials, to Hospital Secretary by 16th October.

TREDEGAR GENERAL HOSPITAL, Mon. Senior HOUSE OFFICER (surgery) required at above Hospital (20 miles from Newport and 24 from Cardiff). Surgery Unit of 50 Beds and 6 orthopædic beds under daily supervision of Consultant Surgeon and visiting supervision of Orthopædic Surgeon. Busy Outpatients (10 specialties) and Casualty Departments.

Apply, with full particulars, to Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

TRURO. ROYAL CORNWALL INFIRMARY. (212 Beds. 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the combined pre-registration post of HOUSE SURGEON (E.N.T. and Ophthalmic Departments) and JUNIOR HOUSE PHYSICIAN, vacant 4th November, 1953.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to the Hospital Secretary.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—212 Beds. 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR RESIDENT HOUSE OFFICER to the Orthopædic and Traumatic Department. This is a large and busy centralised unit with 2 Consultants, 64 Beds, and Outpatient Departments also 45-Bed Rehabilitation Annexe which deal with the whole of the West Cornwall Area.

Applications, stating age, nationality, qualifications and experience, and accompanied by copies of 2 recent testimonials, should be forwarded to the Hospital Secretary, Royal Cornwall Infirmary, Truro, without delay.

TRURO. ROYAL CORNWALL INFIRMARY. (212 Beds. 9 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the newly created office of SENIOR HOUSE OFFICER (Pathological Department).

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be sent to the Hospital Secretary, Royal Cornwall Infirmary, Truro.

TUNSTALL, BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE OFFICER (medical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

WINDSOR. KING EDWARD VII HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (geriatrics) required for post vacant 21st October. Salary £700–£50–£1000 p.a., less £120 p.a. board-residence. Residence at Old Windsor Unit.

Applications, stating age, nationality, qualifications with dates, and experience, with 3 testimonials or names of referees, to Hospital Secretary by 23rd October.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN (pædiatric) required, Male or Female, for post vacant 26th November. Hospital recognised for D.C.H.; residence at the Old Windsor Unit. Preference given to person seeking pre-registration House Officer post; candidates must be members of a medical protection society. National salary.

Applications, stating age, nationality, qualifications with dates, and experience, with 3 testimonials or names of referees, to Hospital Secretary by 23rd October.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN required, Male or Female, for post vacant 31st November. Preference given to person seeking pre-registration House Officer post; candidates must be members of a medical protection society. National salary.

Applications, stating age, nationality, qualifications with dates, and experience, with 3 testimonials or names of referees, to Hospital Secretary by 23rd October.

WINDYGATES, FIFESHIRE. CAMERON I.D. HOSPITAL. RESIDENT HOUSE PHYSICIAN required for 6 months. The post is recognised for Pre-registration Service. The Hospital consists of 100 infectious diseases beds, including 12 for treatment of tuberculous meningitis, and 30 chronic sick beds. Salary in accordance with national scale.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE OFFICER (gynæcology) required, vacant immediately. The Hospital is recognised by the Royal College.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required immediately. Resident. Post recognised for F.R.C.S. Wide experience available under Area orthopædic team. Appointment for 6 months in the first instance.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE PHYSICIAN to Maternity Department, vacant 26th November. Hospital is recognised by the Royal College.

Applications, with copies of 2 testimonials, to the Secretary.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Medicine to serve the Caernarvon and Anglesey Hospital Management Committee. The successful candidate will be based at the Caernarvon and Anglesey General Hospital, Bangor, and may also be expected to serve other hospitals within the Group. The post is non-resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in General Surgery to serve the Mid-Glamorgan Hospital Management Committee. The successful candidate will be based at Bridgend General Hospital (400 Beds), and may also be expected to serve other hospitals within the Group. This Hospital is recognised for F.R.C.S. The post may be resident or non-resident and will be subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WHISTON. COUNTY HOSPITAL. (882 Beds.) Applications are invited for the appointment of RESIDENT PÆDIATRIC HOUSE PHYSICIAN. The Hospital is recognised for the D.C.H. examination. The department comprises 22 Cots and 28 Beds and in addition there are 75 neonatal cots and a busy Outpatients Department.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded immediately to—

N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee,
Group Office, County Hospital, Whiston, near Prescot.

WAKEFIELD. THE GENERAL HOSPITAL, Park Lodge-lane, WAKEFIELD. (160 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. Applications are invited for the appointment of a SENIOR HOUSE OFFICER in General Surgery at the above Hospital. Terms and conditions of service are in accordance with the National Health Service Act and regulations thereunder.

Applications should be made to the Group Secretary, Clayton Hospital, Wakefield.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. 2 Locum HOUSE SURGEONS (resident) required for general surgery and orthopædics for any period up to 31st January, 1954.

Apply, giving full particulars to Group Secretary, Clayton Hospital, Wakefield.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Senior House Officer grade) £670 p.a. The Hospital is recognised for the F.R.C.S. (Eng.), and the post offers excellent experience in general surgery.

Applications should be made to the undersigned immediately.

W. READ, Group Secretary.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited for :—

(*a*) Locum SENIOR HOUSE SURGEON (general surgery) for month of October. Salary £13 per week, less a deduction of £2 10s. per week for board, lodging, &c.

(*b*) Locum HOUSE SURGEON (gynæcology and general surgery). Salary £8 per week, less a deduction of £1 18s. 4d. for board, lodging, &c.

Address written applications with full particulars to—

G. L. BANNER, Group Secretary.
Victoria Chambers, Wood-street, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. THORACIC UNIT. Applications invited for the following appointments in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital :—

(i) SENIOR HOUSE PHYSICIAN.
(ii) SENIOR HOUSE SURGEON.

Salary for above posts £670 p.a., less a charge of £130 p.a. for board, lodging, &c.

(iii) Locum SENIOR HOUSE OFFICER. Salary £13 per week less a charge of £2 10s. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses or reference, to—

G. L. BANNER, Group Secretary.
Victoria Chambers, Wood-street, Wakefield.

WORCESTER (near). POWICK MENTAL HOSPITAL. Locum JUNIOR HOSPITAL MEDICAL OFFICER required.

Applications, with copies of testimonials, should be sent to the Medical Superintendent.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female). Salary will be £350–£450 p.a., less a deduction of £100 for full residential emoluments.

Applications should be sent to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female) at the above Hospital. National Health Service terms and conditions. The staffing of the Surgical Unit consists of a Senior Reigstrar, Senior House Officer, and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary will be at the rate of £350, £400, or £450 p.a. according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee,
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is an approved pre-registration House Officer post. Salary will be at the rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee,
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) for the Casualty Orthopædic Department of the above Hospital. Salary £700–£50–£1000 p.a., Whitley Council conditions of service.

Applications, giving details of age, qualifications, and previous experience, together with copies of 2 recent testimonials, should be sent to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee,
Maelor General Hospital, Wrexham.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Male or Female) required at the above Hospital. House Officer grade post, now vacant. Approved pre-registration post.

Applications, stating age and qualifications, together with the names of 2 referees, should be forwarded to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as early as possible.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 16 BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)
SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.
HOUSE OFFICER (Casualty Department), vacant now.
HOUSE OFFICER (Ear, Throat and Nose Department), vacant 31st October.

Wolverhampton and Midland Counties Eye Infirmary
HOUSE OFFICER, vacant now. Appointment recognised for F.R.C.S. and D.O. examinations.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary,
The Royal Hospital, Wolverhampton.

WARWICKSHIRE. SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Applications are invited for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at the Warwick Hospital. The post is now vacant.

Applications, giving the names and addresses of 3 referees, should be sent to the undersigned as soon as possible.

W. A. JAMES, Group Secretary.
87, Radford-road, Leamington Spa.

WARWICKSHIRE. SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). SENIOR HOUSE OFFICER (anæsthetics). Applications are invited for this appointment which is at present vacant. Duties at hospitals in the Group but mainly at the Warneford Hospital, Leamington Spa.

Applications, giving names and addresses of 3 referees, to be sent to the undersigned as soon as possible.

W. A. JAMES, Group Secretary.
87, Radford-road, Leamington Spa.

WARWICK HOSPITAL, Lakin-road, Warwick. (265 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Applications are invited for the appointment of CASUALTY OFFICER (Male or Female), Senior House Officer grade. The post is suitable for one reading for higher qualifications and offer facilities for contact with all Specialist Units in the Hospital.

Applications, together with 2 testimonials, to be sent to the Administrative Officer, Warwick Hospital, Warwick, as soon as possible.

WARWICK HOSPITAL. Applications are invited for the resident post of HOUSE OFFICER in Orthopædics. Work includes attendance at clinics.

Applications, with copies of 2 recent testimonials, to the Administrative Officer, Warwick Hospital, Lakin-road, Warwick.

WORTHING HOSPITAL, Lyndhurst-road, Worthing, SUSSEX. (221 Beds.) WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SURGICAL HOUSE OFFICER (Senior House Officer grade). The post is recognised for the revised Fellowship regulations in respect of the 6 months training required by candidates for the Final Fellowship examination.

Applications, stating age, qualifications, nationality, and experience, together with copies of 2 recent testimonials, to be forwarded to the Hospital Secretary, as soon as possible.

A. V. OAKTON, Group Secretary.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks (218 Beds)

(*a*) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer). Recognised for F.R.C.S. Vacant now.

(*b*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties, some orthopædics.

East Riding General Hospital, Driffield, Yorks (249 Beds)

(*c*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties.

(*d*) HOUSE PHYSICIAN (first, second, or third post), vacant early October. Pre-registration post. Duties include medical and chronic wards, casualty and some anæsthetics and midwifery. Good general experience for first house appointment.

Northfield Sanatorium, Driffield, Yorks (78 Beds)

(*e*) HOUSE PHYSICIAN (first, second, or third post). General Sanatorium treatment. Provision may be made available for thoracic surgery, pathological experience, and M.M.R. Unit. Time for study.

Salary for (*a*) is £670 p.a., less £140 for board and lodging; and for (*b*), (*c*), (*d*), and (*e*) £350–£450 p.a., less £100 for board and lodging. Fully qualified practitioners may also apply for the pre-registration posts.

Detailed applications to Secretary, Westwood Hospital, Beverley, Yorkshire.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

Grange Hospital, York (Geriatric Hospital of 259 Beds with Consultant staff)

JUNIOR HOSPITAL MEDICAL OFFICER in Geriatrics (resident or non-resident) as soon as possible. Residence available at Doctors' Hoste of modern general hospital in same grounds. Charge of £153 for residence.

Naburn and Bootham Park Hospital, York

JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry to live in or near Bootham Park Branch, which is 5 minutes walk from centre of York. Quarters available for single person at a charge of £158. Combined hospital, which has at present 565 Beds, is in process of expansion and has high turnover of cases. Has private and amenity beds. Associated outpatient clinics are held at York County Hospital in addition to outpatients seen at Bootham Park. Facilities for attending D.P.M. course at Leeds University.

Both posts Junior Hospital Medical Officer grade. Salary £700–£50–£1000.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, immediately to Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. HOUSE SURGEON required. House Officer grade post, now vacant. Hospital has busy general surgical practice, including gynæcology and operative obstetrics. Duties include casualty rota duty, assistance in Outpatient and Fracture Clinics, and in the Operating Theatres, and the care of surgical inpatients. 4 residents on staff.

Applications, giving full particulars, with copies of 2 recent testimonials, to the Secretary, Noble's Hospital, Douglas, Isle of Man.

U.S.A. SAINT VINCENT'S HOSPITAL, Bridgeport, CONNECTICUT. A.M.A. approved ROTATING INTERNSHIPS available, leading to Residencies in Specialties, in a 400-Bed general hospital, close to Metropolitan New York. In addition, it has the following features:—

(1) Regional hospital teaching affiliation with New York, University-Bellevue Medical Centre.

(2) State Department Exchange-Student Programme.

For information, write to Administrator, Saint Vincent's Hospital, Bridgeport, Connecticut, U.S.A.

Public Appointments

GLAMORGAN EDUCATION AUTHORITY. RHONDDA URBAN DISTRICT COUNCIL. COMMITTEE FOR EDUCATION. Applications are invited from registered medical practitioners for appointment as ASSISTANT MEDICAL OFFICER, under the supervision of the District School Medical Officer at a salary of £950 p.a., rising by annual increments of £50 to £1300 p.a. Preference will be given to candidates holding the D.P.H. or D.C.H., and experience in pædiatrics will be an advantage. The appointment is superannuable and the successful candidate will be required to pass an examination as to physical fitness. The successful candidate, if in need of housing accommodation and not already a resident of the Rhondda Urban Area, may be offered the tenancy of a Council house.

Forms of application and conditions of appointment may be obtained from the District School Medical Officer, Tydfil House, Pentre, Rhondda, by whom completed applications should be received as soon as possible.

D. J. JONES, Clerk of the Council.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications invited from registered medical practitioners for post of ASSISTANT ADMINISTRATIVE MEDICAL OFFICER OF HEALTH (Male or Female). Candidates should hold the Diploma of Public Health. The successful candidate will have an opportunity to gain experience in all branches of the Public Health Service, including maternity and child welfare. The salary scale is £1250–£50–£1450. Commencing salary within the scale will depend upon the Medical Officer's experience. Pension scheme (including Widows and Orphans); medical examination. The Officer appointed will be required to devote his/her whole-time to official duties and the appointment will be subject to 1 months notice on either side.

Form obtainable from Medical Officer of Health, Council House, Birmingham, 3. Applications with 3 testimonials, to be returned by 19th October, 1953.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications invited for appointment of Whole-time DENTAL OFFICER (Male or Female). Duties will be concerned with dental inspection and treatment of expectant and nursing mothers and young children up to age of 5 years. Salary £800–£50–£1250 p.a. with placement on the scale according to experience. Pension scheme (including widows and orphans); medical examination. The Officer appointed will be required to devote his her whole time to official duties and the appointment will be subject to 1 months notice on either side.

Applications, stating qualifications and experience, with names of 3 referees, to be sent to Medical Officer of Health, Council House, Birmingham, 3, not later than 26th October, 1953.

GOLD COAST LOCAL CIVIL SERVICE. The following vacancies exist in the Medical Department of the Gold Coast:—

MEDICAL OFFICERS, for general duties, including hospital and district work.

RADIOLOGIST, to take charge of Hospital X-ray Department and to train junior staff as X-ray attendants. Candidates must possess the Diploma in Medical Radiology (diagnostic) or equivalent qualification.

Appointments are to the Gold Coast Civil Service on short-term contracts of 2 tours of 18 to 24 months in the first instance with gratuity on satisfactory completion of service. Basic salary scale would be £1330–£2310 a year. Gratuity would be at the rate of £37 10s. for each completed 3 months of service. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights while in the Gold Coast (for not more than 6 years). Salary, in this case, would be in the scale £1055–£1850 a year, and officers would receive a resettlement grant of 20% of the aggregate of their Gold Coast salary at the end of their engagements. Starting-point in both salary scales is determined according to qualifications and experience. Quarters are provided at rental not exceeding £150 p.a. Income-tax at local rates. Free passages provided for officer, wife and up to 3 children under 13 years of age. Annual local leave is permissible and generous home leave is granted after each tour.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE.117/13/04).

GOLD COAST LOCAL CIVIL SERVICE. The following SPECIALISTS are required for duty in the Medical Department of the Gold Coast:—

EAR, NOSE, AND THROAT, to form and take charge of E.N.T. Departments in the larger hospitals. Candidate must hold the F.R.C.S., and have had special experience in an E.N.T. Department.

MALARIOLOGIST, required to organise treatment and anti-malaria campaigns. The candidate should be a qualified doctor and he should have had experience of malaria control and research.

Appointments are to the Gold Coast Civil Service on short-term contracts of 2 tours of 18 to 24 months in the first instance with gratuity on satisfactory completion of service. Basic salary scale would be £2375–£125–£2750 a year. Gratuity would be at the rate of £37 10s. for each completed 3 months of service. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights while in the Gold Coast. Salary, in this case, would be in the scale £1900–£100–£2200 a year, and Officers would receive a resettlement grant of 20% of the aggregate of their Gold Coast salary at the end of their engagements. Quarters when available are provided at rental not exceeding £150 p.a. Income-tax at local rates. Free passages provided for officer, wife and up to three children under 13 years of age. Annual local leave is permissible and generous home leave is granted after each tour.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE.117/13/02).

MONMOUTHSHIRE COUNTY COUNCIL. The Council invite applications from duly qualified medical practitioners for the appointments of ASSISTANT MEDICAL OFFICERS. Possession of the D.P.H., D.C.H., D.Obst.R.C.O.G., or similar qualifications would be an advantage. The salary will be at the rate of £950 p.a. rising by increments of £50 to a maximum of £1300 p.a. The successful candidates will be required to act under the direct supervision of the County Medical Officer, to devote whole time to the work of the County Council, and to reside in such place as the County Council may determine. The posts will be subject to the provision of the National Health Service Superannuation Regulations, and to a satisfactory medical examination.

A schedule of duties to be performed, together with conditions of appointment and a form of application can be obtained from the County Medical Officer, to whom applications accompanied by copies of not more than 3 testimonials, are to be sent by 31st October, 1953.

VERNON LAWRENCE, Clerk of the Council.

County Hall, Newport, Mon.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctors are vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
EDINBURGH NORTH..	MIDLOTHIAN	.. 24TH OCTOBER, 1953
NESTON	CHESTER	.. 24TH OCTOBER, 1953
WOOLWICH	LONDON	.. 24TH OCTOBER, 1953
WESTBURY	SALOP ..	.. 24TH OCTOBER, 1953
SPALDING	LINCOLN	.. 24TH OCTOBER, 1953
WHITSTABLE ..	KENT ..	.. 24TH OCTOBER, 1953
EDINBURGH SOUTH..	MIDLOTHIAN	.. 24TH OCTOBER, 1953

WOOLWICH. THE LONDON COUNTY COUNCIL invite applications from local registered medical practitioners for appointment as VISITING MEDICAL OFFICER to the reception centre for men without a settled way of living—Plumstead High-street, S.E.18. Salary £50 a year.

Duties and further details are set out on the application form which can be obtained from the Medical Officer of Health (PH/D.1), County Hall, Westminster Bridge, S.E.1, and should be returned by 17th October. (1065.)

HER MAJESTY'S COLONIAL SERVICE. Nigeria. Applications are invited from Doctors with medical qualifications registrable in the United Kingdom and with at least 1 years experience after qualification for the following posts in the Medical Department of the Government of Nigeria :—

(*a*) MEDICAL OFFICERS, for general duties in preventive and curative medicine which may include purely rural health work, involving much travelling.

(*b*) MEDICAL OFFICERS OF HEALTH. Duties as under (*a*). In addition the selected Officers would undertake the control of sanitary matters, and may be required to perform the duties of Port Health Officer at a sea or air port. Candidates should possess a Diploma in Public Health. A Diploma in Tropical Hygiene, though not essential, is desirable.

Appointments may be made as follows :—

(*a*) on 3 years probation for permanent and pensionable employment in the Colonial Medical Service, with retiring age of between 45 and 55. Pensions are at the rate of 1/600th of final pensionable emoluments for each completed month of reckonable service ;

(*b*) from the National Health Service. Candidates may resign from the National Health Service but retain their superannuation rights during their time in Nigeria (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Colonial salary on leaving Nigeria at the end of their engagement ; or

(*c*) on short-term contract (2–4 tours of 18 months duration) with inclusive salary of from £1087 p.a. rising to £2000 p.a. ; on completion of contract a gratuity is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).

Officers appointed under (*a*) or (*c*) are required to contribute to a Widows' and Orphans' Pension Scheme. Salaries, including pensionable expatriation pay for Officers appointed under (*a*) or (*b*) range from £950 to £1850 p.a. Starting salary in all cases depends on experience and war service. Quarters are provided at low rents. Free passages in both directions are provided for Officer and his wife. Payment of the cost actually incurred on 1 outward and 1 homeward passage for each of 2 children under age of 18, subject to maximum of £75 in respect of the return journey for each child, is also granted. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of 18 months duration.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 117/14/01).

HER MAJESTY'S COLONIAL SERVICE. British Guiana. RADIOLOGIST required for the Medical Department, British Guiana, to perform general work of Radiologist and to supervise and control X-ray Department in the Public Hospital at Georgetown. He may be required to visit and supervise working of X-ray units in other hospitals, and perform such other medical duties as the Director of Medical Services may request. Appointment on permanent basis with pension (non-contributory) at age of 55, or on short-term agreement for 3 years in first instance. Doctors in the National Health Service may resign from the National Health Service but retain their superannuation rights during their time in British Guiana (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their British Guiana salary on leaving British Guiana at the end of their engagements. Free unfurnished quarters are provided and total emoluments of £1650–£1850 a year made up as follows : Salary scale from £1000 to £1200 p.a., private practice not permitted but a non-pensionable allowance of £300 p.a. in lieu of consultation fees is payable together with a pensionable specialist allowance of £300 p.a. and a temporary non-pensionable cost-of-living allowance of £50 p.a. Pension is earned at the rate of 1/600th of final pensionable emoluments for each completed month of service. Income-tax at local rates. Local leave permissible and generous home leave granted after each tour of 2–3 years. On appointment free passages provided for Officer, wife, and children under 18 years, not exceeding 5 persons in all. Free passages on leave provided for Officer and wife only. Candidates must possess medical qualifications registrable in the United Kingdom, have obtained a Diploma in Medical Radiology, and have had not less than 2 years experience of radiology and be prepared to undertake some radiotherapy. Arrangements could if necessary be made for a short course in radiotherapy before appointment.

Application forms from Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. 27215/346).

HER MAJESTY'S COLONIAL SERVICE. Nairobi. Applications are invited for appointments as HOUSEMEN at the King George VI Hospital, Nairobi. Appointment will be on agreement for 1 year in the capacity of a House Physician or House Surgeon. These posts are interchangeable by mutual agreement after 6 months experience in either. Officers should be under the age of 30 and single. Candidates who have not yet completed their pre-registration training should confirm from their Licensing Bodies that these posts are acceptable to them for the purposes of the Medical Act, 1950. Salary £300 a year for the first 6 months and £350 a year for the second 6 months. In addition, a cost-of-living allowance of 30% of salary and a messing allowance of £144 a year is payable. Income-tax at local rates. Furnished quarters including linen, cutlery, china and glassware, together with light, fuel, and water are provided free of charge. Free passages are provided on appointment and on satisfactory completion of internship. 18 days local leave a year is granted. If the selected candidate applies for and obtains appointment to the Colonial Medical Service in Kenya at the expiration of his internship, previous service as Resident Medical Officer will count for leave but he will be required to serve the usual probationary period. The period of internship will not count for seniority. Ample opportunities for clinical experience with systematic teaching and a large measure of personal responsibility under specialist guidance is afforded. Applications will only be considered from candidates who are not liable for National Service during the period of the engagement.

Candidates should apply for forms of application to the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE.117/7/03).

WEST HAM. COUNTY BOROUGH OF WEST HAM. DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners holding the D.P.H. or equivalent qualification. Salary £1600–£50–£50–£100–£1800 p.a. Appointment terminable by 3 months notice on either side.

Further particulars obtainable from Medical Officer of Health, 225, Romford-road, West Ham, E.7, to whom applications should be returned by 26th October, 1953.

G. E. SMITH, Town Clerk.

West Ham Town Hall, Stratford, E.15.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

WALTHAMSTOW, LONDON, E.17. Applications invited for retirement VACANCY (urban). List at present, approximately 3150. Residence, surgery, and surgery furnishing and equipment available, by purchase, from the retiring Doctor. Apply on Form E.C.16A before 22nd October, 1953, to—

E. BERGDAHL, Clerk, Essex Executive Council.

131/3, Fillebrook-road, Leytonstone, E.11.

MANCHESTER. Applications invited from Doctors wishing to undertake General Medical Services in Manchester. Neither residence nor surgery accommodation available to successor to the practice. Approximate number of persons on list of retiring doctor 3300. Applications, on Form E.C.16A (obtainable from address given below), should be sent to undersigned not later than 24th October, 1953.

H. GLASS, Clerk of the Council.

Ardwick Town Hall, Ardwick Green North, Manchester, 12.

MANCHESTER. Applications invited from Doctors wishing to undertake General Medical Services in Manchester (for death vacancy). Approximate list number 3000. Applications, on Form E.C.16A (obtainable from address given below), should be sent to undersigned not later than 24th October, 1953.

H. GLASS, Clerk of the Council.

Ardwick Town Hall, Ardwick Green North, Manchester, 12.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

The General Electric Company's Witton Works, Birmingham, requires a whole-time Medical Officer (Male). Commencing salary from £1600. According to qualifications and experience. Candidates should preferably hold a higher qualification and/or have some industrial experience. Full staff and equipment are available. Applications should include the names of 2 referees.

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Consultant's Secretary requires similar part-time post. Fully experienced in medical work.—Address, No. 864, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

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Wanted, 1 copy each of the following issues of "The Lancet" 19th November and 24th December, 1927 ; 25th February, 1939 ; and 6th January, 1951.—Please reply to Medical Superintendent at the Cheshire Joint Sanatorium, near Market Drayton, Salop, stating price, if any.

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Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, October 10, 1953.
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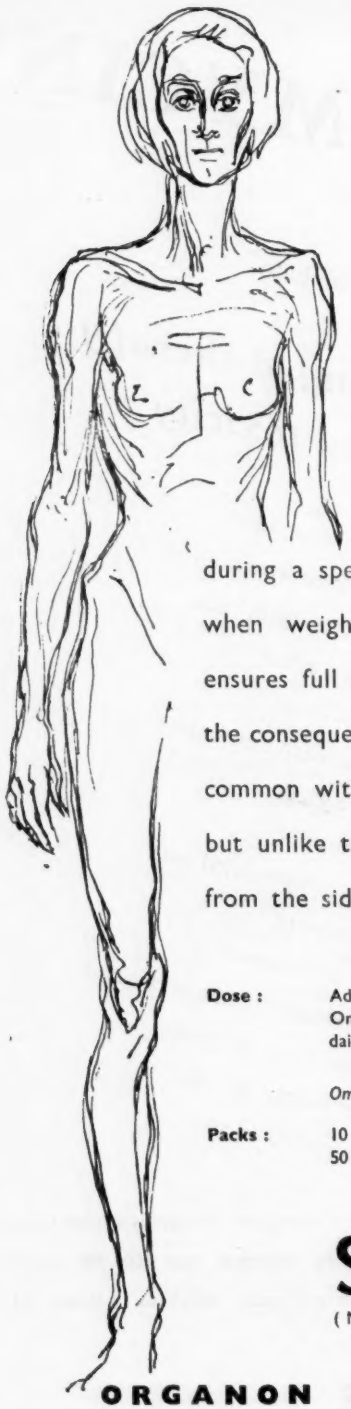

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